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ABSTRACT

A total of 232 studies on the effects of participation in vocational education that were reported from 1968 through 1979 were analyzed. The studies were classified into more rigorous, less rigorous, and national studies, and were summarized within these groups. Studies of secondary and postsecondary programs were reviewed separately. Focus on the analysis was on determining if there were consistent findings with regard to seventeen selected employment, educational and training, and ancillary effects variables. These variables were employment/unemployment, occupation related to training, earnings, employee satisfaction, employer satisfaction, attitudes toward work, work habits, basic skill attainment, academic abilities, attendance and dropout, occupational skill attainment, continuing education, satisfaction with training, aspirations, attitudes and values, feelings of success, and citizenship. No difference in unemployment rates was found for vocational and nonvocational high school graduates. Postsecondary graduates generally had lower unemployment rates. Mixed results were reported for earnings, basic skill attainment, and academic abilities. Vocational students were satisfied with their training and reported feeling good about themselves. Fewer vocational graduates continued their education beyond the secondary level. Insufficient data were available concerning occupational skill attainment and dropout rates. (MN)

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THE EFFECTS OF PARTICIPATING IN VOCATIONAL EDUCATION: SUMMARY OF STUDIES REPORTED SINCE 1968

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FOREWORD

Request for evidence on the effects of educational programs are being made with increasing frequency. Those who must decide how public funds are to be used need more and better information to help them choose among competing alternatives. Vocational education, because of its apparent potential to deal with many of the nation's serious problems, is especially being called upon to demonstrate the effects it can produce.

The report represents an attempt to identify and summarize as many studies as could be assembled on the effects of participating in vocational education. To assure the studies referred to contemporary programs, the review was limited to the period 1968 to 1979. The emphasis was on comparing across a large number of varied studies to determine if they yielded any consistent patterns of results. Surprisingly, in contrast to much of the controversy over the effects of vocational education, similar results were found for many of the variables, such as the relationship of training to employment, employer satisfaction and former students' satisfaction with their preparation.

This review attempted to be exhaustive, but undoubtedly some studies were not included. If readers are aware of studies that they feel should have been included, please bring these to the attention of the senior author, Donna Mertens, for inclusion in future review and synthesis activities related to the effects of vocational education.

Producing a report of this type required the assistance of many abstracters and reviewers. Those who assisted in this effort, in addition to the authors, were Susan Chafetz, Patricia Fornash, Mollie Orth, Mildred Quinn, and Bruce Shylo. The efforts of these individuls are much appreciated. Appreciation is also expressed to the reviewers of earlier drafts of this manuscript: William Ashley, the National Center; John Grasso, West Virginia University; Gerald Kapes, Texas A & M University; and Tim Wentling, University of Illinois. Their reviews helped to sharpen the focus of this report. Donna Mertens had the major responsibility for coordinating the search and abstracting of the literature and for the preparation of this report. Morgan Lewis also contributed portions of the final report and served as project director. The project was conducted in the Evaluation and Policy Division.

The funds for this study were provided by the Office of Vocational and Adult Education, U. S. Department of Education.

Robert E. Taylor, Executive Director
The National Center for Research in Vocational
Education

EXECUTIVE SUMMARY

This report represents an attempt to assemble and summarize all studies that could be obtained on the effects of participating in vocational education that were reported from 1968 through 1979. An extensive search of published sources and solicitation of unpublished reports yielded a total of 1,489 unpublicated titles. After irrelevant studies were eliminated and the remainder screened, a total of 232 were abstracted for use in this report. These were classified into more rigorous, less rigorous, and national studies and summarized within these groups. Studies of secondary and postsecondary programs were reviewed separately.

The emphasis in this analysis was to summarize across a large number of studies to determine if there were constant findings with regard to selected variables. The emphasis was not on critiquing the quality of the studies or on developing a conceptual model for the evaluation of vocational education. The seventeen variables used as the framework for the summary were selected from actual and implied goals reflected in federal legislation and from previous conceptual work in evaluation which has been conducted at the National Center.

This review yielded the following findings regarding the effects of vocational education on participants.

Employment

- No difference in unemployment rates were found for vocational and nonvocational high school graduates. Postsecondary vocational graduates generally had lower unemployment rates than did their nonvocational peers.

- A majority (over 50 percent, usually closer to 70 percent) of secondary and postseconday vocational graduates obtained jobs in training-related areas.

- Mixed results were reported for earnings. Some studies reported no differences between vocational and nonvocational graduates; others reported an initial earnings advantage for vocational graduates which disappeared over time. Trade and industry graduates at the secondary level and technical graduates at the postsecondary level consistently had higher earnings than graduates of other vocational programs. A majority of employers were satisfied with vocational graduates; a majority of graduates were satisfied with their jobs.

Education

- Mixed results were reported for basic skill attainment and academic abilities, although vocational students appeared to be below academic and above or the same as general curriculum students.

- Insufficient data were reported on occupational skill attainment to draw any conclusions (although employers were satisfied).

- Insufficient data were available to determine if vocational education helps to retain potential dropouts.
- About one-third of vocational graduates continued their education beyond the secondary level, while almost twice as many nonvocational graduates did so.
- Vocational graduates were satisfied with their training.

Ancillary Effects

- Fewer vocational than nonvocational students planned to attend college.
- Vocational graduates reported feeling good about themselves.
- Civic activity (e.g., voting) was infrequent for both vocational and nonvocational graduates.

CHAPTER I

PURPOSE AND APPROACH

The effects, or outcomes, from participation in vocational education are probably the most debated policy questions relevant to vocational education. Other questions, such as how vocational education can act to overcome sex stereotyping or to serve individuals with special needs, have merit in themselves. They acquire much more meaning, however, if it can be established that vocational education produces effects that are different from those produced by alternative curricula.

Because of the importance of this question, vocational education has been the subject of a great many evaluative studies. Unfortunately many of these studies have not been readily available. The existing reviews have tended to emphasize a selected sample of the better known studies, often those based on national data bases such as the National Longitudinal Surveys of Labor Market Experience and the National Longitudinal Study of the High School Class of 1972. There remained among analysts who have prepared such reviews a feeling, or sense, that there were a great many more unreported studies which would permit greater certainty in the conclusions drawn as to the effects of vocational education.

The present study was conducted to attempt to identify, assemble, and summarize all studies on the effects of vocational education that were reported from 1968 through 1979. The word "reported" was chosen carefully. It was meant to convey a study that produced some written document describing its purpose, methods, and results. Such studies did not have to be published. In fact special efforts were taken to identify studies that were never entered into the traditional literature bases. The steps that were taken to identify and assemble all relevant studies are reported in Chapter 2. They included: computer searches, reviews of bibliographies, and letters to members of groups involved in vocational education research.

Despite all these steps, some studies were probably not identified and some which were identified were not obtained. These omissions could have resulted from several causes. First, a study may not have been identified because it was not entered into the literature bases that were searched. If a study had been entered, it may not have been indexed with the descriptors that were used in the computer search. Individuals who were contacted concerning unreported research may not have responded to the request. Second, a study may have been identified, but a copy could not be obtained. Some studies which were published in established journals could not be obtained at the Ohio State libraries. Attempts to secure them through interlibrary loan were either not successful, or they arrived too late for inclusion. This was also true of some published books. Third, a study may not have been included in the review, even if it were identified and obtained, because it was misclassified when it was reviewed. These misclassifications could result from judgmental errors that a study did not contain data on relevant variables or that it did not refer to public vocational education.

Because of omissions arising from such causes, no claim is made that this review includes all studies reported since 1968. It contains all those that an extensive search could locate, but omissions undoubtedly remain. Readers will have to judge for themselves whether the inclusion of such omitted studies would significantly alter the conclusions derived from the studies that were reviewed.

Framework and Rationale

Once the studies were obtained the basic analytic approach was to summarize across all the studies that provided information on selected dependent variables. A framework was developed for selecting the variables and structuring the review. This framework was based primarily on federal legislation, which has articulated various national goals for vocational education, and on research that has been conducted at the National Center to identify appropriate outcome measures for vocational education (Darcy et al., 1979, and McKinney et al., 1978).

Since the Smith-Hughes Act of 1917 provided the first federal funds for secondary school programs in agriculture, home economics, and trade and industrial education, preparation for employment has been seen as a major goal of vocational education. In sections 10 and 11, the 1917 act specifically mentioned ". . .that the controlling purpose of such education shall be to fit (individuals) for useful employment . . ." Similarly, section 8 of the Vocational Education Act of 1963 indicated that vocational education is ". . .designed to fit individuals for gainful employment . . ." Again, in the Vocational Education Amendments of 1968 (section 108), vocational education's purpose was ". . .to prepare individuals for gainful employment . . ." The Education Amendments of 1976 broadened the definition to programs ". . . directly related to the preparation of individuals for paid or unpaid employment, or for additional preparation for a career. . ." (section 195). The 1976 amendments further required (section 112) each state to evaluate each program. ". . . which purports to impart entry level job skills according to the extent to which program completers and leavers—

(i) find employment in occupations related to their training, and

(ii) are considered by their employers to be well-trained and prepared for employment. . ."

The specific employment variables used in this review were employment and unemployment rates, employment in areas related to training, earnings, employer satisfaction with former vocational students, and employee satisfaction.

Section 112, in addition to specifying two criteria by which program completers and leavers shall be evaluated added the phrase: ". . . except that in no case can pursuit of additional education or training by program completers or leavers be considered negative in these evaluations." This phrase, together with the expansion of the definition to include programs which lead to "additional preparation for a career," recognizes that vocational programs do not constitute the last formal education for many students. Vocational programs prepare students for additional education or training as well as for entry into the labor market.

Educational effects of vocational education thus were selected as another major category of dependent variables. These variables included the extent to which vocational students continued their education; the effects of vocational education on the attainment of basic communications and computational abilities as well as occupational skills; the extent to which participation in vocational programs enhances attendance or prevents dropping out of school, and the satisfaction of former students with the training they received.

In addition to its explicit education and employment objectives, vocational education has always had a more or less diffuse set of goals related to personal growth and citizenship. Vocational educators have long claimed that the special features of their programs provide unique learning opportunities, especially for students who find little of meaning and few opportunities for accomplishment in academic classrooms. Many of the youth groups in the various occupational areas, such as Future Farmers and Future Homemakers of America, Vocational and Industrial Clubs of America, and Future Business Leaders of America, put primary stress on the development of leadership skills and citizenship. Since goals in these areas are less explicit, and less reflected in legislation, they have been labeled "ancillary effects." Table 1 lists the basic dependent variables which were selected to organize the summary of findings presented in this report.

Limitations

The studies that are reviewed vary widely on almost every possible dimension: the characteristics of the participants who were studied, the geographic area covered, the time period and economic conditions that existed when the data were collected, the instruments and methods used to collect the data, and the depth and sophistication of the data analysis. Furthermore, most of these studies were not intended or designed to add to the body of verified knowledge about vocational education. Instead they were conducted to provide information for the administration of ongoing programs and to fulfill federal and state reporting requirements.

In addition, the programs that were studied were themselves quite varied. There is no national system of vocational education. There is essentially a collection of local systems, coordinated and supervised by the separate states, in which the federal government has certain pervasive national interests. These local systems are designed and operated in response to local needs and pressures and reflect wide variability in content and quality.

These caveats are raised to caution the reader as to what this review attempted to do. Given the variability of the studies and the programs on which they were based, it was not possible to present an examination of the strengths and weaknesses of the separate studies. Instead the emphasis of the review was to summarize the results of all the studies that could be assembled. All of these studies were flawed to some degree, some far more than others. This variability in quality was reflected by separating the local, state, and regional studies into more and less rigorous categories. The actual criteria used for this classification are discussed in Chapter 2. In essence, the more rigorous studies came closer to meeting recognized standards for the collection and reporting of data. The more rigorous studies are discussed in greater detail, and their findings are summarized separately from the findings of the less rigorous studies.

Another category, national studies, was also used to organize and summarize the assembled studies. Although there are a great many reports that present analyses of national data, most of these data are obtained from a limited number of basic sources, such as the National Longitudinal Surveys of Labor Market Experience. Studies that have reported on these data bases have been recently reviewed by Grasso and Shea (1979). Consequently this review did not attempt a comprehensive summary of these same sources. Instead a sampling of the results of some of the major national studies was included to facilitate comparison with the summaries of the results from the more and less rigorous nonnational studies.

TABLE 1
MAJOR SETS OF DEPENDENT VARIABLES

Type/Class	Variables
I. Employment	A. Employment-Unemployment
	B. Occupation related to training
	C. Earnings
	D. Employee satisfaction
	E. Employer satisfaction
	F. Attitudes toward work
	G. Work habits
II. Education/Training	A. Basic skill attainment
	B. Academic abilities
	C. Attendance and dropout
	D. Occupational skill attainment
	E. Continuing education
	F. Satisfaction with training
III. Ancillary Effects	A. Aspirations
	B. Attitudes and values
	C. Feelings of success
	D. Citizenship

The basic analytic approach was to compare the results across the three groups of studies. When the preponderance of the studies yielded similar findings, it was concluded that the separate studies, regardless of their internal weakness or the variability in the programs they examined, were reflecting general effects that are usually produced by participation in vocational education.

Although it is recognized that more and better research is needed, it is always needed. Those who wish to withold judgments until the definitive research has been performed will have a very long wait. There is a vast disparity between the best and worst studies, measured on methodological grounds, in this report. Nevertheless, even the best studies are vulnerable to many criticisms that could bring into question their results and conclusions. It is inherently difficult to conduct research on the effects of educational experiences, even in controlled laboratory settings. When the research is basically of the follow-up type, dependent on the cooperation of a wide variety of respondents many of whom see little of personal relevance in the effort, the problems are multiplied many times. What remains, therefore, are imperfect results obtained by methods that are always flawed to some degree. The judgment must be made whether a review of such imperfect results can provide some information or whether all of these results should be ignored until better research is conducted. Obviously this review has chosen the first option. None of these studies, nor all of them in combination, can provide definitive answers on the effects of vocational education. The summary of results across many studies can, however, suggest certain effects that appear likely to have been due to participation in vocational education.

Organization of the Report

Following this introduction, the methodology for the study is reported in Chapter 2 including a description of the searches and the screening and reviewing processes. The criteria used to determine the methodological rigor of each study are also delineated. The outcomes of the reviewing process are included in Chapter 3, with the findings of the research presented first for secondary-level and then for postsecondary studies. Chapter 4 presents an integrative summary and a discussion of the conclusions that were derived from this review.

CHAPTER II

METHODOLOGY

Data Acquisition Strategy

The review process was comprehensive, encompassing nearly 1500 studies. Studies and reports published since 1968 available from libraries and computerized data bases were identified and reviewed. Published literature was identified not only by means of computer searches (e.g., Educational Resource Information Center/Current Indexes to Journals in Education [ERIC/CIJE]), but also through a search of card catalogues at the National Center's research library and by utilization of extant bibliographies at the National Center. Efforts were also made to obtaining unpublished materials. The computer searches made between May and November 1979 included the following data bases: ERIC/CIJE, Dissertation Abstracts, Abstracts of Instructional Materials/Abstracts of Research and Related Material (AIM/ARM), National Technical Information Systems (NTIS) and the Smithsonian Science Information Exchange (SSIE). The method and descriptors of these searches are presented in Appendix 1.

The results of the computer searches described above were cross-checked against the following sources:

1. A bibliography compiled by Bolland, and published in *Vocational Education Outcomes: Annotated Bibliography of Related Literature*, Columbus, Ohio: The National Center for Research in Vocational Education, 1979.

2. Four searches of ERIC/CIJE conducted by NIE for Ralph Bregman of the National Advisory Council for Vocational Education (NACVE).

3. An annotated bibliography on cooperative education from the study *Cooperative Education—A National Assessment* by A.M. Cohen and L.C. Lewis of Applied Management Sciences, Inc., Silver Springs, MD, 1976.

4. A computer search of ERIC/CIJE previously run at the National Center focusing on student attitudes.

5. The bibliography from the article on "Higher Voc-Ed in America" by Fred L. Pincus that appeared in *Social Policy* 10, No. 1 (1979): 34-40.

In addition to the searches and bibliographies described above, Robert E. Taylor, executive director of the National Center for Research in Vocational Education, addressed the September 1979 meeting of the State Directors of Vocational Education in Scottsdale, Arizona. He requested that they send to the National Center any reports that dealt with the effects of vocational education. A copy of the printed material that accompanied Dr. Taylor's remarks is reproduced in Appendix 2.

The National Center also solicited reports not in the ERIC system from Research Coordinating Units (RCU), state advisory councils for vocational education, large city research departments, and university graduate programs. The letter for RCU directors was actually addressed to the state directors of vocational education who were asked to forward the letter to the RCU director. Sending the letter through the state directors made it possible to reinforce Dr. Taylor's earlier request that was made at the state directors' meeting.

While the search process was quite thorough, it is recognized that every study that addresses the effects of vocational education was not located. As was mentioned in Chapter 1, it is possible that studies have been conducted that were not submitted to any of the computerized data bases or were not reported in professional journals or were not sent to the National Center. Despite quality checks which were built into the screening process, it is also possible that some of the studies that were reviewed were misclassified. Recognizing these limitations, the studies that are included represent a wide range of research in this field. Readers must judge for themselves whether the major conclusions of this report would be changed by the addition of studies that were omitted.

Screening and Classification Process

Researchers do not agree on the criteria for deciding which studies should be included in a review and synthesis report. Glass and Smith (1978) recommend including all studies that present sufficient information for computing effect sizes and looking for differences in study characteristics. They contend that it is dysfunctional to institute rigorous inclusion standards. Eysenck (1978), on the other hand, criticizes lenient standards as "abandonment of of scholarship." Referring to the efficiency of psychotherapy, he stated that no study had been conducted with sufficient methodological rigor to provide useful information as to its efficacy. Pillemer and Light (1980) take the middle of the road and suggest that all studies included in a synthesis should adhere to certain basic standards for research reporting. They also state, "While it seems sensible to exclude studies that fail to meet basic acceptability standards, it is also important to realize that different types of studies may produce different outcomes simply because they are designed to elicit different information (p. 192)."

In order to select studies germane to the scope of this report, a screening process was developed which involved three stages. The screening process, described below, allowed studies to be excluded that provided no relevant data, and made it possible to discriminate among those studies that did provide relevant data on the basis of their degree of methodological rigor.

Stage One

In stage one of the screening process, the reviewers scanned titles (in the case of library searches), or titles and document abstracts (in the case of Dialog searches). Reviewers determined if the study presented information concerning the effects of vocational education on participants. At this stage, many studies were eliminated because they did not deal with vocational education (e.g. the topic may have been career education or administrative climate), or they presented information on evaluation methodology, planning functions, or program description. Studies of manpower programs, teacher training, proprietary schools, curriculum models, needs assessment, prevocational programs, and enrollment trends were screened out at this level. Studies eliminated at this level were included in *Effects of Vocational Education Bibliography of Rejected Titles* (Mertens et al., 1980a). They numbered 834. The total number of studies to enter stage two was 655.

Stage Two

The screening process in stage two was accomplished by using the actual document for the purpose of determining the relevance of the study. At this stage, the studies were divided into two groups: contains relevant data, or does not contain relevant data. The following is a list of reasons with the frequency that they were used to eliminate irrelevant studies:

Reason	Frequency
No empirical data	104
Conducted outside the United States	7
Focuses on career education	5
Inappropriate sample	50
No relevant outcome variables	162
No outcomes for vocational education participants	11
No original data	6

Short abstracts of studies that were eliminated at this stage are included in *Effects of Vocational Education Abstracts of Rejected Studies* (Mertens et al., 1980b).

Stage Three

The relevant studies were then divided into three groups: local, state, or regional studies that were "more rigorous"; local, state, or regional studies that were "less rigorous"; and national studies. A study was categorized as "less rigorous" if it met one or more of the following criteria:

A. Studies based on very small samples (i.e. twenty-five subjects or less).

B. Studies that did not describe their methodology in adequate detail.

C. Studies with less than a 40 percent response rate, unless the researcher reported information about nonrespondents.

D. Studies that lacked some standard of comparison.

If a study had a large enough sample (i.e. over twenty-five), included an adequate description of its methodology, had a response rate of 40 percent or more (or the researcher reported on nonrespondents), and included some standard of comparison, then it was termed "more rigorous." As was alluded to earlier, scholars can debate the criteria for inclusion *ad infinitum*. The above criteria were judged to be relevant for this review.

Studies based on national data bases were not screened on the basis of methodological rigor. The primary national data bases included in this review are Project Talent, National Longitudinal Surveys (of Labor Market Experience; NLS), the Longitudinal Study of Educational Effects (Class of 1972), and the American College Testing Career Assessment Program (ACT). Grasso and Shea (1979) provide an overview of these four studies. Throughout this report, the data bases will be referred to, respectively, as Project Talent, NLS, Class of 1972, and ACT.

To help the reader, throughout this text, the three types of studies described above will be labeled:

more rigorous
less rigorous
national

Figure 1 on the following page summarizies the results of the screening process at each stage.

A list of unavailable studies appears in Appendix 3. These are studies that were unavailable at any of Ohio State University's libraries, through interlibrary loan or from the authors, or that were ordered and arrived too late for inclusion in this review.

Abstraction Process and Quality Check Procedures

Detailed notes were prepared for each of the more rigorous studies. Information for each study included standard bibliographic data as well as: (1) the stated purpose of the study; (2) data collection characteristics; (3) sample selection; (4) sample size; (5) program description; (6) description of demographic or labor market conditions of the community; (7) description of demographic and background characteristics of participants; (8) methodology and data analysis; (9) description of outcome variables; (10) description of comparison groups or classification variables; (11) index to tabular findings; (12) summary of findings reported; (13) overall conclusions reached by the author; and (14) reviewer's comments on generalizability of findings or conclusions.

The notes were prepared to be used in the summary and synthesis of the information. They were intended to provide the persons preparing the synthesis from these notes with information that would allow them to assess the overall adequacy of each study. Notes for the "more rigorous" studies are compiled in *Effects of Vocational Education Fully Abstracted Studies Volumes I and II* (Mertens et al., 1980c).

The following quality checkpoints were included in the review process in order to insure a quality product. First, the project director reviewed each reviewer's notes against the original document. Second, the reviewer with the best methodological skills reviewed the operational definitions for the variables in each review. Third, random checks were done across all reviews in order to insure that reviewer standards were comparable. These random checks were conducted on thirty-two of the eighty-two more rigorous studies (39 percent). Fourth, sets of notes for four studies were independently prepared by pairs of reviewers and the results were compared. It was found that essentially the same information was included by both reviewers.

The methodological criteria described above provided a context for classifying the available studies. This assessment was not meant to discredit past research in vocational education. It is recognized that many of these studies were conducted for specific agency or institutional purposes, and that they have been useful to the institutions involved. The point of the present report is not that such studies are without value, but that they were not conducted in a manner that was most useful for this review. Because of the factors mentioned above, the generalizability of these studies is limited.

For example, vocational education researchers have not been required by their legislative mandates to include comparison groups. However, a comparison group is required to answer the question, "Do students who complete a vocational education program fare better than similar students who do not?" For purposes of continued financial support of vocational education, this is an important question. Another aspect of the comparative issue is the difference among vocational education subgroups. Data that are aggregated across such groups obscure differences among the programs that are crucial in determining the effects of vocational education.

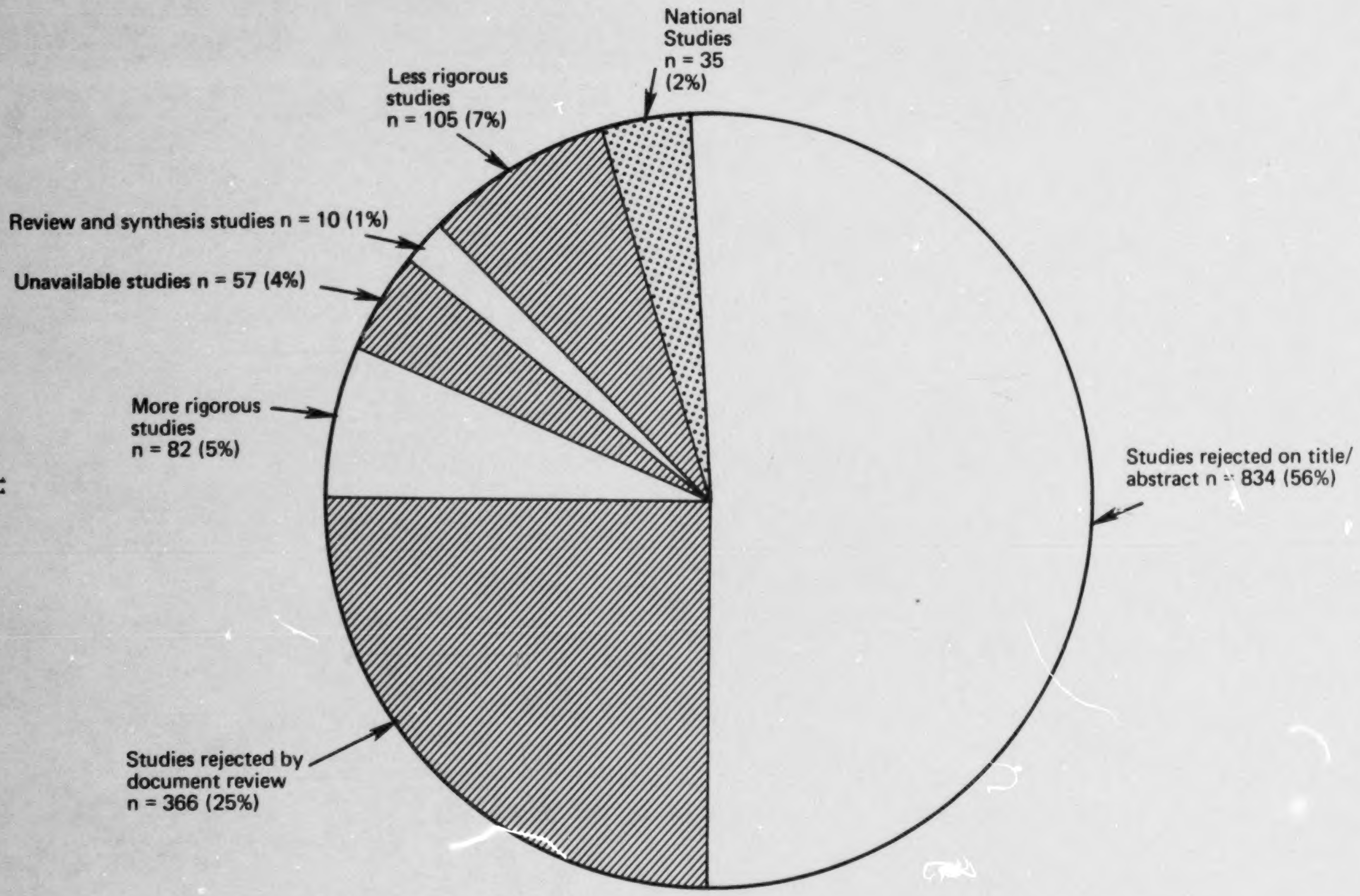

Figure 1. RESULTS OF SCREENING AND REVIEW PROCESS

Method of Synthesizing Results

The method of synthesizing the results varied, depending on the presence or absence of a comparison group. For studies that included comparison groups, reports were contrasted and descriptive summaries of the discrepancies prepared. In some instances, it was possible to compare the observed results with the associated criteria reported for the total population.

A more generalized form of this analyses was employed in those cases where the effects of different independent variables were assessed. This included, for example, comparisons of participants from different occupational specialties, or comparisons of selected criterion performance levels of vocational education students in different geographic regions.

In certain instances, it was not possible or perhaps even logical to compare the criterion performance of vocational education participants with that of other groups. Such a situation would exist when dealing with such criteria as "attainment of specific occupational skill." In these cases, descriptive summaries of the results are provided.

CHAPTER III

RESULTS

The purpose of this chapter is to present the characteristics and findings of the studies included in this review. The characteristics of the studies include such things as the geographic representation and methodological considerations. The findings are organized by educational level (i.e., secondary and postsecondary). Within each educational level, the three major outcome areas of employment, education and training, and ancillary effects are discussed.

Characteristics of the Studies

Table 2 provides the reader with an overall framework of the number of studies which addressed each of the dependent variables. The table reveals that the preponderance of the studies addressed the employment variables, as well as the continuing education and satisfaction with training variables.

Appendix 4 includes tables that present detailed information concerning the methodological characteristics of the studies. The studies are organized into the following categories, with the corresponding frequencies:

Category	Frequency*
• Secondary, national	31
• Postsecondary, national	4
• Secondary, regional, more rigorous	1
• Secondary, state, more rigorous	30
• Secondary, state, less rigorous	39
• Secondary, local, more rigorous	18
• Secondary, local, less rigorous	24
• Postsecondary, regional, more rigorous	1
• Postsecondary, regional, less rigorous	2
• Postsecondary, state, more rigorous	15
• Postsecondary, state, less rigorous	13
• Postsecondary, local, more rigorous	22
• Postsecondary, local, less rigorous	24

***Note:** This column will not add up to the same total as the total number of studies presented in Chapter 2, because some of the studies included data for both secondary and postsecondary participants.

TABLE 2

SUMMARY FRAMEWORK FOR EXAMINING EFFECT STUDIES

Major Outcome/Component	Type of Study					
	Secondary			Postsecondary		
	More Rigorous	Less Rigorous	National	More Rigorous	Less Rigorous	National
I. Employment						
A. Unemployment and Employment	28	21	9	25	16	1
B. Occupation Related to Training	18	30	3	20	19	1
C. Earnings	17	13	3	13	20	0
D. Employee Satisfaction						
• Attitudes Toward Work	8	6	1	4	3	1
E. Employer Satisfaction						
• Work Habits	10	12	0	3	10	0
II. Education						
A. Basic Educational Skills	1	4	0	0	0	0
B. Academic Achievement	1	4	4	2	0	0
C. Specific Occupational Skills	2	2	0	1	1	0
D. School Attendance and Dropout Rates	7	6	3	0	4	1
E. Continuing Education	29	19	6	4	15	0
F. Satisfaction with Training	21	9	2	16	9	0
III. Ancillary Effects						
A. Aspirations	2	2	4	1	0	0
B. Attitudes and Values	5	3	2	0	1	0
C. Feelings of Success	1	1	2	0	0	0
D. Citizenship	2	2	0	0	2	0

Subtotals from these tables reveal that 143 of the studies address the secondary level and 81 address the postsecondary level. Thirty five studies have a national scope; four have regional scope; ninety-seven are state; and eighty-eight are local.

For each study, the following information is included in the appendix: the author and date of publication, scope and location of the study, date of graduation and date of survey, sample characteristics, original sample size, response rate, dependent variables, and methodology. The map on the following page depicts the geographic representativeness of the studies included in this review (see Figure 2). As the map indicates, the subjects of the studies are from thirty-nine of the fifty states and the District of Columbia. In addition, thirty-five national studies are included in this review. Thus, the studies are fairly representative of the United States as a whole.

Because of the large volume of studies included in this review, it was not feasible to present an in-depth critique of each study. The studies were classified as more or less rigorous on the basis of sample size, description of methodology, response rates, and inclusion of a comparative standard. In lieu of a more in-depth criticism of each study, the following methodological considerations are discussed:

1. *Self-selection bias*. Traditional research methodology calls for random assignment of subjects to experimental treatments in order to determine the effect of each treatment in an independent manner. Obviously, school systems are not free to randomly assign students to a vocational, general, or academic curriculum. As a result, systematic differences in the types of persons enrolled in each program may account for more of the variance in effects than the programs themselves.

   Grasso and Shea (1979) present empirical differences between students in vocational education and other curricula in terms of selected demographic characteristics (e.g., SES, race, ability, and sex). Stromsdorfer (1972, p. 40) suggests that members of these groups may also vary on other characteristics such as value of earnings, job status, additional college education and other factors associated with the multiple outcomes of education. This self-selection bias is a threat to validity. It is recognized that even sophisticated statistical techniques cannot isolate program effects in a self-selected sample. However, careful description of sample characteristics can alert the researcher to systematic differences that need to be taken into account. Few of the studies included in the present report provide sufficient demographic information about the participants.

2. *Definition of the program*. Vocational education programs can vary in quality, content, intensity, and duration. As Pillemer and Light (1980) point out, similarly labeled treatments or programs may differ in important ways. The question arises, "Do programs with the same labels offer the same services?" Grasso and Shea (1979, p. 133) noted that none of the national surveys seem to include information on the process by which students choose or are tracked into a vocational program or change curricula enrollment. Grasso (1979) suggested that the extent to which a student changes from one curriculum to another will affect the validity of an effectiveness measure. In very few instances is there an attempt to define vocational education in the studies included in the present report.

3. *Identification of students*. Three methods have typically been used to determine a student's classification into a general, academic, or vocational program. These are: self-report, administrator's designation, and use of student transcripts. Grasso and Shea (1979) noted that the National Longitudinal Study of the High School Class of 1972

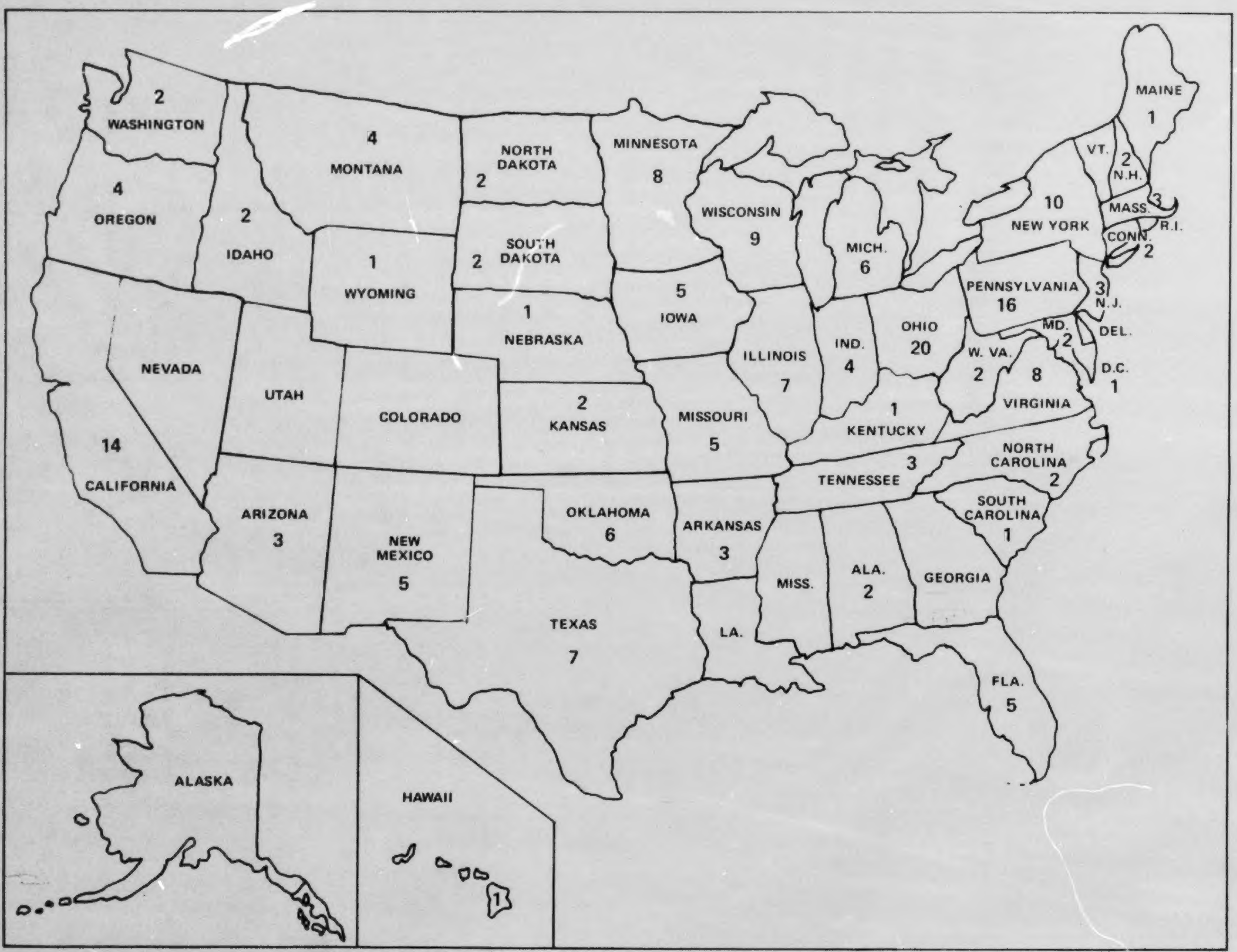
2
WASHINGTON
4
OREGON
4
MONTANA
2
IDAHO
NORTH DAKOTA
2
MINNESOTA
8
SOUTH DAKOTA
2
1
WYOMING
WISCONSIN
9
MICH.
6
MAINE
1
VT.
2
N.H.
10
NEW YORK
3
MASS.
R.I.
CONN.
2
5
IOWA
1
NEBRASKA
NEVADA
UTAH
COLORADO
2
KANSAS
ILLINOIS
7
IND.
4
OHIO
20
PENNSYLVANIA
16
3
N.J.
MD.
2
DEL.
D.C.
1
W. VA.
2
8
VIRGINIA
14
CALIFORNIA
MISSOURI
5
1
KENTUCKY
NORTH CAROLINA
2
3
TENNESSEE
ARIZONA
3
NEW MEXICO
5
OKLAHOMA
6
ARKANSAS
3
SOUTH CAROLINA
1
MISS.
ALA.
2
GEORGIA
TEXAS
7
LA.
FLA.
5
ALASKA
HAWAII
1

Figure 2. NUMBER OF STUDIES BY STATE IN WHICH CONDUCTED

obtained information from all three sources. An examination of results reveals substantial disagreement among the three methods. They present the conclusion that neither the administrators' nor the students' reports adequately describe the pattern of courses. The most frequent methods used in the studies included in the present report were self-identification and administrator identification. Only rarely were transcripts used to identify the students' curriculum.

4. *Reliability and validity of dependent measures*. Many of the national, regional, state, and local studies do not report reliability or validity data for their measurement instrument. However, Conger, Conger, and Riccobono's (1976) study of the reliability of a subsample of items in the Class of 1972 survey does provide some insight into this matter. They found that contemporaneous, objective, factually oriented items are more reliable than subjective, temporarally remote, or ambiguous items. They also found that reports of income are generally of low reliability and validity. Interview-collected date tended to be more reliable than mail-in data. They also reported a number of interactions for selected demographic subgroups, e.g., by ethnicity, SES, ability and sex.

   One exceptional study at the state level was reported by Pucel and Luftig (1975). They examined the realiability of the student vocational follow-up system developed at the University of Minnesota. They found very high reliabilities (82 to 100 percent) for items pertaining to an individual's work history, with the exception of salary information and number of months employed. Moderately high reliabilities (79 to 91 percent) were reported for items pertaining to the graduates' judgements of the facilities, equipment, instruction, and whether or not they would choose the same program again. Lower reliabilities (57 to 78 percent) were reported for items pertianing to training curriculum and community services (with the exception of placement assistance). They concluded that ". . . the data gathered from the student follow-up questionnaire are sufficiently reliable to be used as one source of information in decision-making concerning vocational programs."

5. *Contextual factors*. The vocational education legislation places emphasis on students obtaining occupations related to their training. However, employment is affected by other factors such as the state of the economy and the labor market. Earnings is another variable that is commonly used to measure the effectiveness of vocational education. Yet, evidence does suggest that this variable is influenced to a considerable degree by unionization (Freedman, 1976).

These methodological considerations constitute a framework in which the results of the separate studies should be viewed. In general, they tend to obscure rather than enhance differences among curricula. The differential effects of the separate curricula must be fairly powerful to be detected with existing methods.

Secondary Level Studies

I. Employment Effects Studies

This section deals with research related to the employment experiences of secondary program leavers. The variables included are employment and unemployment, relatedness of occupation to training, earnings, employee satisfaction, and employer satisfaction.

A. Employment and unemployment. The major outcome addressed by most studies focusing on the effects of vocational education is the employment and unemployment experience of vocational education students after training. In the literature review conducted as a part of this research project, fifty-eight studies were found to address this outcome.

An examination of these studies revealed that most researchers attempted to measure employment and unemployment by posing a question on a survey instrument such as "Which of the following best describes your current status?" followed by such response options as employed full-time or part-time, not employed but seeking work, attending school, homemaker, serving in the military, or other. Because not all the authors used the same response categories, the comparability of the results across studies was suspect.

In addition to this measurement problem, several other constraints were evident. The survey populations varied greatly from study to study, and often little demographic data were presented to describe the participants of the study. Also, the response rates in the studies varied from less than 40 percent to 100 percent for vocational students, with the response rates for comparison groups within studies also varying widely. In short, the problem of response bias, a cause for concern in all survey research, operated to various degrees in the studies examined.

Since employment and unemployment were measured in a variety of ways, it was decided that a common metric should be adopted in this review. Thus, employment was defined as those respondents who identified themselves as employed full-time or part-time. The unemployment rate was defined as the percentage of those in the labor force who identified themselves as not employed but seeking employment. This method prevented respondents who were not in the labor force because they were homemakers, students, in the military, or for other reasons from being classified as unemployed.

With these constraints in mind, the more rigorous studies that used vocational and nonvocational comparison groups are discussed first. This is followed by a discussion of the more rigorous studies which examined differences among vocational subspecialty areas. Finally, the results of less rigorous and national studies are discussed.

Through the literature review, eleven *more rigorous studies* were identified as reporting employment and unemployment outcome information for secondary-level vocational and nonvocational comparison groups. The four studies which are statewide in scope are summarized first, followed by the seven studies that are local.

The Oregon Department of Education and the Educational Coordinating Council conducted a follow-up survey of 25 percent of the 1973-74 graduates and dropouts of high schools in Oregon less than one year after their graduation (Oregon Department of Education and Coordinating Council, 1975). An overall return rate of 50 percent produced a group of 2,065 respondents. The results were summarized for four groups of students: vocational graduates, vocational dropouts, nonvocational graduates, and nonvocational dropouts. An estimate of the rate of unemployment among those reported as in the labor force and seeking employment yielded an unemployment rate of 13.7 percent among the vocational respondents and a rate of 21.1 percent among the nonvocational respondents. The unemployment rate among dropouts was more than double that of graduates in both of the curriculum groups.

These rates, however, are much higher than those obtained for the high school class of 1977 in Oregon (Career and Vocational Education System, Oregon Department of Education, 1978). When these former students were followed up, the unemployment rate was only 6 percent for the former vocational students and 6.7 percent for the nonvocational students. The much higher earlier rates may be partially explained by the generally high levels of unemployment when the 1974 students left school.

If this finding were to be replicated it would suggest that vocational preparation may confer a relative advantage during periods of high unemployment. However when Copa, Irvin, and Maurice (1976) surveyed the 1974 graduates in Minnesota, they found no difference in unemployment between vocational and nonvocational graduates. The rate for both was 10.5 percent. These graduates were surveyed approximately ten months after graduation, and a remarkable 84 percent of the sample of 17,624 returned their mail questionnaires.

Burgess (1979) also reported data based on a large sample with a high response rate. The sample was the 2,338 secondary graduates in Michigan in 1978. Data were collected for 93 percent of these graduates when they were followed up six months after leaving school. From the results Burgess presents on "employed" and "not employed but looking for work," the unemployment rate for vocational graduates was estimated to be 11.7 percent and for nonvocational graduates, 13.2 percent.

An overall view of the four statewide studies revealed a similar trend: a higher percentage of vocational education graduates employed than nonvocational graduates, but similar unemployment rates for the two groups. A higher percentage of nonvocational graduates than vocational graduates are involved in other pursuits such as post-secondary education. In addition, the 1975 Oregon Department of Education and the Educational Coordinating Council study reported that dropouts from both types of curriculum suffer a higher rate of unemployment than graduates.

In addition to these statewide studies, seven more rigorous studies were located dealing with comparisons on employment and unemployment of vocational education and other curriculum groups at the secondary local level. These studies are reviewed below in chronological order starting with the oldest studies.

Hu et al. (1968) present six years of follow-up data for students from three unidentified cities. A total of 1,255 usable questionnaires were obtained primarily by mail but supplemented with 187 personal interviews which were conducted to test for nonresponse bias. All respondents who had attended any type of college were excluded from the analysis. Five curriculum categories were constructed, apparently from information from the student transcripts. These ranged from intensive vocational technical, defined by three or more units of credits "in some recognized skill area of industrial education," to general where one credit unit or less of such training was taken. Indexes of percent of time employed were calculated for the six-year follow-up period. These indicated that the vocational-technical graduates were employed significantly more than graduates of the academic curriculum.

In one of the few experimental studies encountered, Kaufman and Lewis (1972) reported the employment status of high school dropouts who volunteered to take part in experimental, one-year programs that led either to a high school diploma (general academic curriculum) or to a certificate of participation in a skill training program. Data on employment status are presented for periods one year and three years after the end of the experimental phase. In addition to the information collected from program completers, data were obtained for program dropouts, control, and regular graduates from the major high school in the area who were matched to the program completers on sex, race, and IQ. Overall, there were no significant differences between the general and vocational curriculum subjects in any of the major groups of experimental program completers, program dropouts, or matched regular high school graduates.

Dinger, Myers, and Berner (1973) published the results of three surveys conducted with a special education population. Educable mentally retarded (EMR) secondary students who had graduated from four different types of special programs (work study, academic, internal vocational, and external vocational) were surveyed six months after graduation. The students were drawn from the graduating classes of 1970, 1971, and 1972 in the Midwestern Intermediate Unit IV in Pennsylvania. In the work study program, the student spent half the day working on academic subjects and the other half placed at a community job training station. In the academic program, the students remained in school all day in a special education program having less than ten periods per week of industrial arts or vocational agriculture instruction. Students in the internal vocational program remained in school all day in an approved special education curriculum having industrial arts or vocational agriculture instruction more than ten periods per week. Students in the external vocational program divided their time equally between academic subjects and vocational skill training provided by private agencies (trade schools). The results of the survey indicated that 70 percent of the graduates from the work study program, 39 percent from the academic program, 38 percent from the external vocational program, and 37.5 from the internal vocational program were successfully employed (defined as employed at least 70 percent of the time available for work at a gross salary equal to or higher than the poverty level income index). Thus, the work study program was considered to be significantly more effective than the other programs in preparing EMR students for employment.

Katz, Morgan, and Drewes (1974) published survey results obtained from a follow-up of secondary school graduates of the classes of 1968, 1971, and 1972 in the District of Columbia Public Schools. The survey was conducted in the spring of 1974, and 29 percent of the survey population participated in the study. Nonrespondents were found to be similar to respondents in terms of sex and program. The analysis of the survey results indicated that 12 percent of the vocational graduates and 5 percent of the academic graduates who were not in school were looking for work. The more recent vocational graduates showed lower rates of employment than the earlier graduates. The authors also reported that 21 percent of the currently employed academic graduates and 15 percent of the vocational graduates had been unemployed at some time in the year prior to the survey. Although this result seemed to favor the vocational graduates, it was not statistically significant.

In a survey conducted during the 1974-75 school year, Swanson (1976) surveyed vocational and nonvocational students from the graduating classes of 1969, 1971, and 1973 in the Buffalo, New York metropolitan area. A 59 percent response rate was obtained in the survey. Results of the survey indicated that 82 percent of the vocational education male graduates and 64 percent of the vocational female graduates obtained a job within six months of their graduation. For nonvocational graduates, 81 percent of the males and 64 percent of the females obtained employment within six months of graduation. Swanson also developed indexes of annual labor force participation rates and average hours worked per year. Both of these were analyzed, controlling for number of years since graduation. These indexes yielded no consistent pattern of differences between vocational and nonvocational graduates.

The Duval County School Board in Jacksonville, Florida conducted a six-month follow-up of the graduating class of 1978 (Duval County School Board, Jacksonville, Florida, 1979). Forty-seven percent of the graduates responded to the survey. For vocational program respondents, 22 percent related they were unemployed and looking for work, and for the academic program, this figure was 19 percent.

In a very thorough longitudinal study, Herrnstadt, Horowitz, and Sum (1979) surveyed 427 secondary graduates from cooperative vocational education programs, regular vocational education programs, general academic/college preparatory programs, and work study programs in the Boston, Massachusetts area. The students were interviewed four times: prior to graduation, and approximately six, twelve, and eighteen months after graduation. The response rates for the surveys were 80 percent at six months, 61 percent at twelve months, and 68 percent at eighteen months. The results of the study revealed that the only significant difference in employment during the follow-up period was between the work study graduates and the general academic graduates with the former enjoying significantly more employment than the latter. In terms of unemployment, none of the high school programs differed from each other. However, a large degree of variation in number of weeks unemployed was reported by the participants.

As a group, the local secondary studies were more carefully conducted and analyzed than the statewide studies. The greater care evident in these studies, however, did not lead to a more definitive set of findings. One of the studies (Hu et al., 1968) found significantly more employment over a six-month period for vocational graduates. Swanson's (1976) study, however, included respondents who had been out of school one through seven years and found no consistent differences. Three of the other studies found no difference (Kaufman and Lewis, 1972) or that vocational students had higher rates of unemployment (Katz et al., 1974 and Duval County School Board, Jacksonville, Florida, 1979).

One finding that was consistent for two of the studies (Dinger et al., 1973 and Herrnstadt et al., 1979) was that work experience while in school was associated with significantly less unemployment in the follow-up period. This was found independent of curricula.

The literature search located seventeen more rigorous studies dealing with the outcomes of employment and unemployment for vocational education program areas. Ten studies were conducted at the state level while seven were local in scope. A summary of the unemployment rates reported in these studies are displayed in Table 3. For the agriculture program, 9 of the 13 reported percentages are below 10 percent, and all are below 20 percent. For distributive education, half of the 10 reported percentages are below 10 percent, and 9 are below 20 percent. For home economics, 4 of the 15 reported unemployment percentages are below 10 percent, and 9 are below 20 percent. Sixteen percentages were reported for the business and office area; 9 were below 10 percent, and 15 were below 20 percent. For the health area, 14 percentages were reported, with 5 of these falling below 10 percent and 11 falling below 20 percent. For the technical area, 4 of the 5 reported percentages were below 10 percent, and all were below 15 percent. For trades and industry, 12 of the 16 percentages fell below 10 percent and 15 fell below 20 percent. Thus, for the more rigorous studies, over half of the 89 reported percentages were below 10 percent unemployment, and 77 of them are below the 20 percent unemployment rate. The health and home economics areas consistently reported higher unemployment rates than the other areas. The results for home economics is probably due to a lack of distinction between home economics for gainful employment and for homemaking. (A more detailed table of percentages of employment, unemployment, and other activities by study are reported in Appendix 5).

A summary of the *less rigorous studies* which examined employment and unemployment at the secondary level is also presented in Table 3. Of the 41 percentages of unemployment reported, 31 are below 10 percent. This is a more positive trend than was found in the more rigorous studies. Thirty-seven of the reported percentages are below 20 percent. This is based on the reports of Ohio (1979), Quesada (1972), Iowa (1977), South Dakota (1970), Strong (1970), Righthand (1977), McLean (1975), Cook et al. (1970), Seamens (1972), Slick (1974), Queens et al. (1978), Franchek et al. (1977), Michigan (1971), Educational Planning and Evaluation Services (1975), Morton et al. (1977), Auburn (1977), Andrews and Roberts (1974). Only Sunnyside (1974), Crim and Ross (1976), Paulter (1975), and Howell (1968) reported unemployment rates above 20 percent.

TABLE 3

SUMMARY OF STUDIES REPORTING UNEMPLOYMENT RATES AT THE SECONDARY LEVEL

	Percent Unemployed							
	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
	Number of Studies							
More Rigorous Studies								
Agriculture	5	4	2	2	0	0	0	0
Distributive Education	5	0	2	2	0	1	0	0
Home Economics	2	2	3	2	0	2	1	3
Health	3	2	1	5	1	2	0	0
Business and Office	3	6	2	4	0	0	1	0
Technical	2	2	1	0	0	0	0	0
Trades and Industry	3	9	2	1	1	0	0	0
Subtotal	23	25	13	16	2	5	2	3
Less Rigorous Studies								
Agriculture	5	0	0	0	0	0	0	0
Distributive Education	3	1	1	0	0	0	0	0
Home Economics	3	1	0	0	0	0	1	0
Health	2	0	0	0	0	0	0	0
Business and Office	2	1	1	1	0	0	0	0
Technical	1	0	0	0	0	0	0	0
Trades and Industry	5	0	0	0	0	0	0	0
Vocational Education	3	4	3	0	1	1	0	1
Subtotal	24	7	5	1	1	1	1	1

Grasso and Shea (1979) in their reanalysis of the *NLS data*, concluded, "We failed to find convincing evidence of an alleged labor market advantage of vocational education for young men. We did, however, find consistent labor market benefits of occupational training for young women (p. 156)." They did not find "substantial" differences in the labor market experiences of male vocational graduates as compared to the average general curriculum graduates. Young women from occupational programs with exactly twelve years of school reported less unemployment than did their general peers. They stated, "Nevertheless, the curriculum difference in joblessness was small, and the year-to-year pattern of unemployment reveals the predominant influence of general economic conditions from the mid-1960s to the early part of this decade (p. 157)."

Other studies using the National Longitudinal Survey's data presented similar findings (Parnes, 1970; Kohen, 1970; Center for Human Resources, no date, and Nolfi et al. (1977).

Eckland (1976), Fetters (1975), and Creech (1977) analyzed the Class of 1972 data. Eckland found that the vocational group had a slightly higher rate of unemployment (27 percent) than did the general (24 percent), or the academic group (15 percent). Fetters reported that vocational graduates spent less time looking for work, laid off or waiting for a job than did general or academic graduates. Creech analyzed unemployment rates by sex and curriculum. He found that both male and female vocational graduates had a lower rate of unemployment than did academic or general graduates. Grasso and Shea (1979) argue that the Class of 1972 Study did not measure employment and unemployment in the traditional manner, and that Creech combined students and nonstudents in his analysis.

Eninger (1972), using the Project Metro research, reported data for the seven generic vocational education programs. The results were:

	Percentages of Unemployment
Vocational education	23
Trades and industry	23
Technical	17
Distributive education	22
Business education	21
Health	25
Home economics	39
Agriculture	18

His findings are in line with those presented above. The high rate of unemployment for home economics graduates should be viewed cautiously, as it is based on a small sample and no distinction was made between home economics for gainful employment and for homemaking. Technical graduates enjoy the lowest rate of unemployment.

B. Occupation related to training. This outcome variable was typically measured through self-report. For example, Bice and Brown (1973) asked participants, "On your present job, how much do you use the vocational training you received in high school or area vocational center?" and provided the response options of "a lot, some, hardly any, or none." In a few studies, the authors asked the participants to list their job title and describe their duties, thus allowing the authors to use the *Dictionary of Occupational Titles* to determine the degree of relatedness (e.g. Felstehausen et al., 1973).

Unlike vocational programs at the secondary level, general and academic programs are not designed to provide students with skill training for specific occupations. The variable "occupation related to training" is most meaningful for students who have been trained for a specific occupation. Therefore, results are reported here only for those studies that examined differences among vocational education program areas. First, the results of the more rigorous studies are reported, followed by those of the less rigorous and the national studies. Finally, the results of the more rigorous studies are used to examine the question why individuals obtain employment in areas unrelated to their training.

Table 4 was prepared to display the range of percentages of graduates employed in occupations related to their training as reported in the more and less rigorous studies. The table was constructed using data focusing on each graduate's current job at the time of the study's data collection. The current job information was used because it was available in all of the studies in the table. Information on other jobs was not always collected in the studies. When constructing the table, the U.S. Office of Education program codes were used to assign specific vocational programs to generic program areas. The exact percentages of graduates employed in training-related areas for the more rigorous studies are reported in Appendix 5.

The *more rigorous studies* that addressed occupation related to training at the secondary education level are summarized in Table 4. In the eighteen more rigorous studies, 98 separate percentages representing individuals in occupations related to their training were reported. Of these 98 percentages, 72 indicated that over 50 percent of the graduates were employed in related areas; 48 of the percentages indicated that over 70 percent were employed in training-related areas. Thus, the majority of the studies report that over 50 percent of the vocational graduates are employed in occupations related to their training. The highest rates for related placement were associated with health and business and office graduates.

Table 4 summarizes the results of the *less rigorous studies* that addressed occupations related to training at the secondary level. In thirty of the less rigorous studies, 56 separate percentages representing individuals in occupations related to their training were reported. Of these 56 percentages, 44 were over 50 percent employed in related areas; 28 were over 70 percent. Thus, the results of these studies are quite similar to those of the more rigorous studies reported above.

The less rigorous studies which reported over 50 percent employment in occupations related to training were as follows for the specified program areas:

Howell, 1971—home economics
Andrews, 1974—business and office, trades and industry
Kaufman, 1968—technical, business and office
McCowan, 1971—vocational education
Franchek and Meehan, 1977—vocational education
Bennett, 1971—agriculture
Iowa, 1977—all program areas
Ohio, 1979—all program areas
JFK Memorial High School, 1969—trades and industry, business and office
Auburn, 1974—agriculture, health, business and office, distributive education
Strong, 1970—agriculture, distributive education, home economics, business and office, trades and industry
Weiss, 1971—home economics
Hess, 1975—home economics, business and office, trades and industry

TABLE 4

FREQUENCY OF STUDIES REPORTING PERCENTAGES EMPLOYED IN OCCUPATIONS RELATED TO TRAINING

Secondary Education, More Rigorous Studies

	Percentage							
Program Area	**0-30**	**31-40**	**41-50**	**51-60**	**61-70**	**71-80**	**81-90**	**91-100**
Agriculture	1	1	2	2	4	1	3	1
Distributive Education	1	1	3	1	1	4	2	0
Home Economics	1	2	2	1	3	2	2	1
Health	0	0	1	1	2	5	2	3
Business and Office	2	0	0	1	2	7	2	3
Technical	0	0	3	1	0	1	1	0
Trades and Industry	2	1	3	1	4	3	5	0
Secondary Education, Less Rigorous Studies								
Agriculture	1	2	0	1	1	3	0	0
Distributive Education	1	1	1	0	1	1	2	0
Home Economics	1	0	1	1	2	2	0	0
Health	1	0	0	0	1	0	3	0
Business and Office	0	0	0	1	1	2	3	1
Technical	0	0	0	1	0	0	0	
Trades and Industry	0	1	1	0	2	6	0	0
Vocational Education	0	0	1	2	2	2	2	1

Smiley, 1976—vocational education
McClean, 1975—business and office
Ohio, 1971—trades and industry
Workman, 1969—trades and industry
Franken and Earnhart, 1976—vocational education
Paulter, 1975—vocational education
San Mateo, 1976—health
Employment Placement and Evaluation Services, 1975—
vocational education
Chern, 1973—vocational education
Huber et al., 1971—vocational education

Those less rigorous studies which reported that 50 percent or less of the graduates were employed in training-related areas were as follows for the specified program areas:

Andrews, 1974—agriculture, distributive education, home economics, health
Quesada, 1972—agriculture
Poitevin, 1971—agriculture
Righthand, 1977—distributive education
Kaufman, 1968—trades and industry
J.F.K. Memorial High School, 1969—distributive education
Auburn, 1974—home economics, trades and industry
Ohio, 1978—vocational education

By far the most common source of *national information* on occupation related to training is the National Longitudinal Study of the High School Class of 1972. Tabler (1976) reviewed the results of the first follow-up (conducted in 1973-74). The question posed to the participants to examine this outcome read, "Since leaving high school, have you worked in a job where you expected to use this (high school) training?" The following results were obtained in response to this question:

Response:	**Vocational**
Yes	64%
No, but looked for work where I could use it	17%
No, never looked for work where I could use it	20%

In another national study, Project Metro, Eninger (1972) summarized the follow-up survey that was conducted in the fall of 1970. Results indicated that 23 percent of the graduates were working in the same occupation as their training, 23 percent were working in jobs highly related to their training, 24 percent were working in jobs slightly related to their training, and 30 percent were working in jobs completely unrelated to their training. Combining the response categories indicating at least some degree of relationship between job and training indicated that 70 percent of the participants were employed in jobs related to their training. This figure is similar to the 64 percent figure reported by Tabler using the Class of 1972 data.

The Class of 1972 information reported by the National Center for Education Statistics (1975) presented within vocational education program area comparisons. These data were derived from a survey conducted one and one-half years after the participants graduated from high school. The survey question posed read, "Since leaving high school, have you worked in a job where you expected to use this training?" (See Table 5)

These results indicate substantial variability among vocational program areas, particularly in the categories of working in jobs related to training (the "Yes" category) and never looking for related work.

Reason for Accepting Employment In An Unrelated Area

Another aspect of "occupation related to training" is the reason for accepting employment in an unrelated area. Three of the more rigorous studies at the secondary level asked employees in jobs unrelated to their training to report the reason for accepting such a job. Table 6 presents a summary of the reasons for working in an unrelated area and the percentage of respondents choosing each reason by generic program area. Because none of the studies used similar lists of reasons on their questionnaires, the present authors had to rely on their own judgment when combining the findings into the table. (A complete list of percentages by study are presented in Appendix 5.)

With regard to the secondary level studies summarized in Table 6, the five most common reasons for obtaining unrelated employment were (from most to least popular): no job available in training area, other, didn't like the job or work, high school training insufficient, and couldn't earn enough money in related field.

Examination of Table 6 revealed that the generic program areas differed among themselves regarding reasons for unrelated employment. For the secondary level, the most common reasons for each program area were as follows: agriculture—no job available in training; distributive—no job available in training area; health—didn't like the job or work; home economics—tie between no job available in training area and high school training insufficient; office—tie between no job available in training area and other; technical—other; and trades and industry—no job available in training area.

In the Project Metro study (Eninger, 1972), participants in jobs unrelated to their training were asked to identify the reason they took a job unrelated to their training. The most common reason identified was inability to find a related job followed by not sufficiently qualified for a related job, did not like the type of work, a better job came along first, and never planned to work in the field. Inability to find a job in a related field was also identified in the state and local studies as the most common reason for taking unrelated employment.

C. Earnings. In most of the studies, earnings were measured by means of a personal interview or mail survey asking respondents to report their hourly, monthly, or annual wage on their present or previous job. A unique exception to this method was the use of federal income tax information obtained from the Internal Revenue Service by Ghazalah (1978).

A weakness to be considered while viewing the results on the earnings variable was the lack of reliability or validity information reported in the studies. None of the studies dealing with earnings reported any information regarding the reliability or validity of their measurement techniques. This is a special problem for studies addressing earnings since Conger, Conger and Riccobono (1976) and Pucel and Luftig (1975) found that reports of income are generally of low reliability.

TABLE 5

PERCENTAGE OF VOCATIONAL EDUCATION STUDENTS REPORTING AS HAVING WORKED IN JOB RELATED TO TRAINING SINCE LEAVING HIGH SCHOOL BY PROGRAM AREA

	PROGRAM A Program Areas					
Response	Agriculture	Business & Office	Distributive	Health	Home Economics	Trade & Industry
Yes	56%	70%	52%	63%	36%	52%
No, but looked for work where I could use it	15%	16%	21%	17%	22%	17%
No, never looked for work where I could use it	29%	14%	27%	20%	42%	31%

TABLE 6

SUMMARY OF SECONDARY EDUCATION STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working in Job Field	Areas of Training						
	Agri.	Dist.	Health	Home Ec.	Office	Tech.	T&I
No Job Available in Training Area	28	25	14	32	29	28	35
Learned New Skill in Service or School	0	0	0	0	0	0	0
High School Training Insufficient	13	25	16	32	13	13	12
Couldn't Earn Enough Money in Related Field	8	0	7	0	6	0	6
Better Job Opportunities or Pay in Another Field	10	18	9	10	1	15	5
Didn't Know What the Job Was Really Like	4	0	0	0	3	0	3
Didn't Like the Job or the Work	10	14	27	20	18	13	11
No Chance for Promotion	2	0	2	0	1	0	2
Other	25	18	25	7	29	30	26

A review of the studies comparing earnings of vocational and nonvocational graduates at the secondary level revealed that the studies could be divided into three groups on the basis of their results: (1) those studies that found no difference between the earnings of vocational education and nonvocational education graduates; (2) studies that identified higher earnings for vocational graduates early after graduation but showed the differences dissipating over a period of time; and (3) studies that reported higher earnings for male than female vocational graduates.

In a *more rigorous study*, Herrnstadt, Horowitz and Sum (1978) reported no difference between vocational education graduates regarding earnings. These authors conducted a longitudinal study over the first eighteen months following graduation of a sample of Boston, Massachusetts graduates from high school programs in cooperative vocational education, regular (noncooperative) vocational education, general academic/college preparatory education, and work study programs. Herrnstadt et al. reported that no differences in earnings were found between the vocational education and nonvocational education groups in wages in the first and second job after graduation, and in average wages over the entire eighteen-month follow-up period. Results similar to these were reported by Burgess (1979); Katz, Morgan and Drewes (1974); and Copa, Irvin and Maurice (1976).

In contrast to these studies, Hu, Lee, Stromsdorfer and Kaufman (1968); Market Opinion Research (1973); and Swanson (1976) reported that vocational education graduates earned higher wages than nonvocational graduates relatively soon after graduation from high school but that this advantage was dispelled over time. Hu et al. surveyed 1,442 vocational education and academic program graduates approximately seven years after their graduation from high school. The results of the survey revealed that nonvocational graduates earned less than vocational graduates during the first year after graduation. By the sixth year, however, the difference in earnings between these graduates was no longer statistically significant. Nevertheless, Hu et al. pointed out that over the six years after graduation, vocational graduates earned $3,456 more than nonvocational graduates. The results of Hu et al., Market Opinion Research, and Swanson lend support to the hypothesis that vocational graduates enjoy an initial wage advantage which disappears over time.

The third major result found by an analysis of the secondary comparative studies dealing with the earnings was that male vocational graduates tended to earn more than female vocational graduates. The studies completed by Conroy and Diamond (1976), Duval County School Board in Jacksonville, Florida (1979), the Career and Vocational Education Section of the Oregon Department of Education (1978), and Hu et al. (1968) provided support for the hypothesis that male graduates tend to enjoy higher incomes than female graduates. However, the reasons for the income difference were difficult to pinpoint. As the Division of Educational Service study indicated, male and female graduates tended to be employed in different occupations.

Richardson and McFadden (1976); Parker, Whelan, Gonzales, Trujillo, and English (1979); McCowan, Mongerson, and Carter (1971); Hu et al. (1968); Troutman and Breshears (1969); and Elson (1978) focused on earnings at the secondary level within vocational education subgroups. These studies were diverse in a number of ways such as the vocational subgroups studied, the time period between graduation and survey data collection, and sample composition. For example, Gammel et al. (1976) focused on different specific programs within the technical program area while Richardson and McFadden (1976) reported earnings data for the generic program areas of agriculture, business, distributive, health, and trade and industry. As another example, Hu et al. (1968) reported earnings information for one and six years after graduation, while Troutman and Breshears reported data collapsed across four different years of graduation.

Such methodological diversity would make any overall conclusions across studies quite tenuous. Despite this diversity, the area of trades and industry was most frequently associated with the highest earnings, and home economics frequently was most associated with the lowest earnings.

Two studies focused on the association between job relatedness and earnings. Richardson and McFadden (1976) surveyed approximately two thousand 1972 and 1973 graduates from vocational programs in Indiana. Earnings information was collected on initial employment, at six months after graduation, and at the time of the survey (which could be only as much as twelve months for the 1973 graduates and as much as twenty-four months for the 1972 graduates).Statistical tests were conducted comparing earnings at each time point for those in related or unrelated jobs within each vocational program area (agriculture, distributive, home economics, health, business, and trade and industry). The only significant result was obtained at the six-month time frame concerning distributive education where those in related jobs earned significantly less (mean of $2.42 per hour versus $2.83 per hour) than those in unrelated jobs. The probability of obtaining one significant result from a series of eighteen significance tests exceeds .50 at the .05 significance level, thus clouding the interpretation of this result. Thus, it would appear from this study that vocational graduates in related jobs do not differ concerning earnings from those in unrelated jobs, at least at the time intervals explored in the study.

Loeb (1973) also addressed the same issue. In 1970, this author conducted a survey on 4,460 vocational education graduates who had graduated in the years 1965 through 1969. Earnings for those in related or unrelated jobs were presented for the first job and the current job. However, no statistical tests were computed comparing earnings in related or unrelated employment for either job. It was found that on the first job those in related employment earned on the average $.13 per hour less than those in unrelated jobs, while on the present job those in related employment averaged $.10 per hour more in earnings than those in unrelated jobs. However, since no statistical comparisons were reported, the meaning of the findings is unclear. Obviously, any firm conclusion about the relationship between earnings and job relatedness to training needs further research.

As in the vocational versus nonvocational comparative studies on earnings, several vocational subgroup studies compared the earnings of male and female vocational graduates. Parker, Whelan, Gonzales, Trujillo, and English (1979) and the Career and Vocational Education System (1977) found that males earned more than females. In the Parker et al. study, male graduates averaged an hourly wage rate of $4.03 while females averaged $3.23 per hour. Similarly, the Career and Vocational Education System study reported that full-time working males earned an average of $150 a month more than females.

Thirteen *less rigorous studies* were located that addressed the earnings variable. Eight of these studies presented their results as ranges of income, thus making conversion to a common base impossible (Michigan, 1971; Quesada et al., 1972; McCowen et al., 1971; Andrews et al., 1974; Auburn 1974a, 1974b; Slick, 1974; Ferguson, 1979.)

Two of the studies compared vocational and nonvocational groups. Laska et al. (1973) provided information for graduates from Houston and Austin-San Antonio by academic ability level. Vocational graduates of both sexes, of all academic ability levels, and from both locations earned more money than nonvocational graduates, with the following exceptions: males of middle ability from Austin-San Antonio and females of low ability from Houston. In this study, males consistently out-earned females, no matter which curriculum was considered. They also found that vocational graduates out-earn nonvocational graduates, and males out-earn females no matter what the curriculum.

Comparisons among vocational program areas are based on three studies (Horner et al., 1969; Iowa, 1977; Ohio, 1979). Each study's results were converted to a weekly rate of 1979 dollars using the Consumer Price Index by the authors of this report. The Ohio study reported an overall average of vocational education students of $145.63 for males and $129.65 for females. The overall average for the Iowa study was $145.50. Horner et al. provided data for agriculture graduates employed in related and unrelated fields. The results of the three studies by program areas are displayed in Table 7. The highest wages were paid to trade and industry graduates, and the lowest were paid to health and home economics graduates. Both the Ohio and the Iowa data are based on graduates who were employed in their training areas.

Grasso and Shea (1979) reviewed studies based on four major *national surveys* (Project Talent, Youth in Transition, NLS and the Class of 1972). Because of problems with the other studies, they devoted their attention to the analysis of the NLS earnings data.

Based on a series of regression analyses, they reached several conclusions. Chief among them were: (1) for men, participation in a vocational or nonvocational curriculum makes little difference regarding earnings, (2) among women, business and office graduates were found to receive higher rates of pay and annual earnings than were general curriculum graduates, (3) among both sexes but particularly for men, collective bargaining was found to be associated with increased earnings; however, collective bargaining did not affect the overall curricula results, (4) among men, scholastic aptitude affected the earnings of vocational graduates more than general or college preparatory graduates, (5) among males, vocational graduates experienced slower rates of growth in wages over time than did general graduates, and (6) for females, the effect of working in sex-stereotyped occupations on wages is *not* a straight-forward affair but varies with educational level.

In a later study, Conroy (1979) used information from the Class of 1972 study on the outcome of earnings. Citing data gathered one year after high school graduation, Conroy demonstrated that among participants who did not attend college, vocational graduates (particularly females) earned more than nonvocational graduates during the first year after graduation. Among males, with scholastic ability controlled, vocational graduates earned more than nonvocational graduates at each level of ability (low, average, and high). Also, earnings increased for both curricular groups with ability. In addition, the low-ability vocational graduates earned more than the average-ability nonvocational graduates while the average-ability vocational graduates earned almost as much as the high-ability nonvocational graduates.

Using data gathered in *Project Talent*, Conroy again examined the earnings results while controlling scholastic ability. In data collected five years after graduation, male vocational graduates of average and high ability earned more than male nonvocational graduates of similar ability. This same result was found at all three ability levels among females. Regarding earnings information collected eleven years after graduation, average-ability and high-ability male and female vocational graduates who did not attend college earned more than their nonvocational counterparts. However, the reverse was true for low-ability students. Overall, Conroy stated that ability is consistently related to increased earnings (except for nonvocational females eleven years after high school) and often accounts for greater differences than secondary school curricula.

Information reported in Project Metro (Eninger, 1972) provided information on vocational education program area comparisons regarding the earnings outcome. Among the generic program areas, trades and industry graduates averaged the highest income while home economics graduates averaged the lowest. When examining the earnings of graduates employed in jobs related or unrelated to training, small differences in hourly wage rates were detected for

TABLE 7

REPORTED WEEKLY EARNINGS OF VOCATIONAL EDUCATION STUDENTS BY PROGRAM AREA IN THREE STUDIES

Program Area	Ohio 1979		Iowa 1977	Horner et al. 1969	
	male	female		related	unrelated
Vocational Education	$145.63*	$129.65	$145.50	$132.66	$134.64
Agriculture	165.61	144.30	157.23		
Distributive Education	160.73	144.30	133.40		
Health	100.34	140.75	125.28		
Home Economics			122.20		
Business and Office	148.74	147.41	126.96		
Trades and Industry	187.48	147.41	155.95		

* Converted to a weekly rate of 1979 dollars using the Consumer Price Index.

trades and industry, distributive, agricultural, business and health program graduates. Technical graduates in jobs related to their training averaged $.23 more per hour in earnings than their peers in unrelated jobs. In contrast, home economics graduates in jobs related to their training averaged $.49 less per hour in earning than their peers in unrelated jobs.

Overall, the national studies on earnings presented a complex set of results. The factors of sex, scholastic ability level, collective bargaining, vocational program area, and employment in jobs related to training were found to exert influences on earnings.

D. Employee satisfaction. Job satisfaction has been included in a number of follow-up surveys of graduates from vocational and nonvocational curricula. Most of the research on job satisfaction has concentrated on the measure of overall job satisfaction and the content aspects of job satisfaction. While there does not appear to be an optimal way to measure job satisfaction, it is apparent that most researchers have used the term job satisfaction to refer to the individual's affective reaction to a particular job. Therefore, this section addresses both employee satisfaction and attitudes toward work.

Efforts to collect data on this outcome variable have employed a wide variety of approaches to include questions aimed at (1) determining the satisfaction of graduates with their first postgraduation job; (2) determining the present attitudes or feelings of graduates towards their job and work; (3) determining whether employed graduates would select the same job if they could choose again; and (4) determining if employed graduates would recommend their job to a friend.

Table 8 presents information from eight of the *more rigorous studies* that reported findings of the job satisfaction of secondary vocational graduates and dropouts from comprehensive and vocational curricula. Most of these studies have been follow-ups of former students and have focused on determining the overall present job satisfaction of employed secondary graduates and dropouts. Few studies have focused on determining the employees' satisfaction with extrinsic or context factors such as satisfaction with pay, benefits, working conditions, coworkers, the company or employer, and satisfaction with the quality of supervision received although few researchers would deny the importance of such factors. A few of the studies reviewed indicated that overall job satisfaction is related to or is influenced by a variety of variables including the hourly wage, the degree of relationship between job and training received, and the occupational level or status (Katz et al., 1974; Herrnstadt et al. 1979; McCowan et al., 1971).

In general, the results of these studies give positive and favorable responses with respect to the job satisfaction of secondary vocational graduates. The results of these studies suggest the following:

- Graduates from vocational programs are as satisfied as, or more satisfied than, graduates from other programs or academic curriculum with their present (Kaufman and Lewis, 1972; Weiss, 1971; Katz, et al., 1974; Burgess, 1979; Conroy and Diamond, 1976; and Herrnstadt et al., 1979).
- Vocational graduates appear to be more satisfied with aspects of their jobs related to the nature and pay of their work (Katz et al., 1974; Richardson, 1975).
- The majority of secondary vocational graduates would take the same job over or recommend it strongly to their friends (Katz et al., 1974).

TABLE 8

EMPLOYEE SATISFACTION FOR VOCATIONAL AND NONVOCATIONAL SECONDARY GRADUATES AND NONGRADUATES

Investigator/ Year	Findings
Felstehausen et al., 1973	Thirty-six percent of respondents indicated very high job satisfaction; 31.4 percent indicated high job satisfaction; 23.8 percent indicated moderate job satisfaction
Herrnstadt et al., 1979	1. Graduates of the cooperative programs were significantly more satisfied with final jobs than graduates of other programs. 2. Jobs in technical and managerial occupations as well as jobs in occupational areas related to the high school programs of the graduates contributed to higher overall job satisfaction rating. 3. Job satisfaction was significantly influenced by hourly wage, weekly hours of work, training-related nature of job, and occupation of last job.
Conroy and Diamond, 1976	1. Students in all programs were largely satisfied with their jobs. 2. Occupational students were significantly more satisfied with jobs than nonoccupational students.
McCowan et al., 1971	In all areas the majority of respondents like their job, with half or fewer expected to change their jobs.
Kaufman and Lewis, 1972	The ratings of job satisfaction by subjects were not significantly different across groups.
Richardson, 1975	Graduates who highly liked their present job earned significantly more than graduates who disliked present job.
Katz et al., 1974	1. Nearly 9 out of 10 vocational graduates said they were satisfied with current jobs. 2. Three out of 5 vocational graduates would strongly recommend their job to a friend. 3. Three of 5 vocational graduates would take the same job.
Burgess, 1979	1. Vocational graduates were more satisfied with their jobs than nonvocational graduates. 2. 47% of vocational graduates were very satisfied with job compared to 37% of nonvocational education graduates. 3. 36% of vocational graduates indicated they were somewhat satisfied with job while 44% nonvocational reported there were somewhat satisfied.

- The results for significant differences by vocational programs, areas, or sex are unclear. Herrnstadt et al. (1979), for example, found that graduates of cooperative programs were significantly more satisified with their jobs than graduates of work study, regular vocational, and general academic programs. McCowan et al. (1971) reported that ethnic minorities tended to be less satisfied than their white counterparts. In contrast, studies by Katz et al. (1974) and Kaufman and Lewis (1972) revealed that there were no significant differences by vocational program areas or sex.

Six *less rigorous studies* were located that addressed employee satisfaction. These studies reported the responses of vocational education graduates to the general feeling of satisfaction on the job. The Ohio (1978) study reported that 88 percent of those employed in related areas enjoyed their jobs, contrasted with 72 percent of those in unrelated jobs. McCowan et al. (1971) reported that 80 percent of the males, 87 percent of the females, 76 percent of the blacks, and 85 percent of the whites reported liking their jobs. In the Michigan study (Michigan State Advisory Council for Vocational Education, 1971), 50 percent of the respondents indicated that they were satisfied with their jobs, while 45 percent reported feeling neutral. McLean (1975) also asked business graduates to rate aspects of their job satisfaction. The ratings were generally above the neutral point, on a five-point scale, with the highest satisfaction being expressed for "way job provides for steady employment," "chance to do something different from time to time," "being able to do things that don't go against my conscience," and "working conditions."

Slick (1974) asked graduates to rate their job satisfaction in terms of their ability to make use of their abilities. Sixty-nine percent of the vocational/technical participants indicated being satisfied with this aspect of their jobs. Sixty percent reported being satisfied with their pay, and 73 percent reported being satisfied with the feeling of accomplishment they got from the job.

Andrews and Roberts (1974) provided comparative data for vocational and nonvocational graduates' perceptions of job satisfaction. The results were as follows:

	Percentage Satisfied	**Percentage Dissatisfied**
Work you do		
Vocational	95	5
Nonvocational	90	10
Person with whom you work		
Vocational	96	4
Nonvocational	93	7
Supervision you receive		
Vocational	85	15
Nonvocational	85	15
Appreciation received		
Vocational	83	17
Nonvocational	77	23
Promotions available		
Vocational	72	28
Nonvocational	66	34

	Percentage Satisfied	Percentage Dissatisfied
Pay you receive		
Vocational	84	16
Nonvocational	74	26
Working conditions		
Vocational	91	9
Nonvocational	89	11
Overall job satisfaction		
Vocational	86	14
Nonvocational	85	15

These results suggest that the majority of both vocational and nonvocational graduates are satisfied with their jobs. Vocational graduates appear to be more satisfied than nonvocational graduates, particularly with respect to pay received, appreciation received, promotions available, and work done.

One national study that examined employee satisfaction is the National Longitudinal Study of the High School Class of 1972 (Tabler, 1976). The results of the study revealed that the combined percentages of vocational-technical students satisfied or very satisfied with selected aspects of their jobs were higher than those for general or academic students. The specific percentages for each group are as follows:

Satisfaction with:	**Percentage very satisfied/satisfied**		
	Vocational	**General**	**Academic**
Pay and fringe benefits	71	69	69
Job importance and challenge	75	68	63
Working conditions	82	82	79
Opportunity for promotion and advancement in work	66	59	55
Security and permanence	79	72	71
Opportunity on the job for developing new skills	71	65	59
Overall job satisfaction	80	77	77

Thus, the results of the national study are congruent with those of Herrnstadt et al. (1979), Conroy and Diamond (1976), and Burgess (1979).

E. Employer satisfaction. Employer satisfaction was typically measured by asking employers of vocational students to rate their employees on various factors. These factors included such items as technical skill, knowledge of the area, and interpersonal skills. Thus, this outcome variable examines the employers' satisfaction directly and the employees' work habits indirectly.

Two problems in the measurement of employer satisfaction are pervasive. First, the selection of the sample of employers is problematic. Typically, employers were selected on the basis of recommendations of employees in a previous follow-up study. This "nomination" process could lead to a biased sample of the "better" employers. The second problem area arises in attempting to compare employer satisfaction for vocationally and nonvocationally trained employees. Unless the employers are engaged in similar jobs, the comparison may be one of the "apples to oranges" variety. Insufficient information is generally presented in order to determine whether the two groups do hold similar jobs.

Table 9 presents information concerning ten of the more rigorous studies on employer satisfaction with vocational and nonvocational graduates. Five are state studies, four are local studies, and one is regional in nature. Six of the studies employed a nonvocational comparison group. The great majority of the studies focus on graduates of secondary schools from comprehensive, vocational-technical, and area vocational schools. The vast majority of the studies utilized employer ratings on a variety of measures including: job performance, entry-level skills, technical knowledge, preparation for job, and specific aspects of the job.

A study of 1977 secondary vocational program graduates from community and technical schools in Iowa was conducted by the Iowa Department of Public Instruction (1977). Employers were surveyed by means of a mail questionnaire designed to determine the preparation and performance of vocational graduates on the job. Data collected on the graduates revealed that (1) vocationally trained employees were considered "better prepared" by their employers than nonvocationally trained employees on job skills, technical knowledge, basic reading and verbal skills; (2) vocationally trained employees were rated as performing at or above expected performance by 77.8 percent of the respondents; (3) secondary graduates had higher percentages on better prepared for job skills, technical knowledge, basic reading and verbal skills than postsecondary graduates; and (4) secondary vocational graduates had higher overall performance ratings than postsecondary vocational program graduates.

The Ohio Advisory Council for Vocational Education (Market Opinion Research, 1973) conducted a study of employers of graduates from reimbursable vocational education programs and of graduates from other curriculum programs. The sample for the study included personal interviews with 254 graduates of approved reimbursable vocational education programs and their employers together with 257 graduates of college preparatory, nonapproved vocational, and general curricula and their employment supervisors. The study found that vocational graduates were judged better by their employers than an aggregate sample of college preparatory and general curriculum graduates on skills for entry level employment, technical knowledge for entry-level employment, willingness to learn new job skills or take training, ability to follow suggestions, work habits, attitudes toward company or employer, concern for productivity, and concern for safety.

Three studies of employer satisfaction with employees reported little difference between vocational and nonvocational graduates. Schowalter (1974) conducted a study of fifty-four employers of secondary academic and area vocational-technical school graduates to determine differences in student success on the job as measured by the Minnesota Job Satisfactoriness Scale for rating job performance. The results of her study revealed that neither the academic nor the vocational curriculum better prepared male graduates for employment one year after high school graduation based on employer evaluations. In another study of secondary vocational graduates from cooperative and non-cooperative programs from comprehensive and vocational-technical schools in Ohio, Minnesota, and North Carolina, Molnar et al. (1973) collected data from 200 employers on the living/training experiences of employees. The results of their studies showed that there were no differences between graduates of cooperative vocational programs and graduates of nonvocational programs. Kaufman and Lewis (1972) found employer ratings yielded no differences for all groups.

TABLE 9

EMPLOYER SATISFACTION WITH SECONDARY VOCATIONAL AND NONVOCATIONAL GRADUATES

Investigator/Year	Findings
Report to the Iowa Department of Public Instruction, 1977	1. Employees were rated good to very good on job skills and technical knowledge. 2. Employers were satisfied with employees' quality and quantity of work, attendance, punctuality, and compliance.
Blackford et al., 1979	1. Vocational education graduates were rated above average on job skills and work attitude measures when compared to other entry-level employees.
Enoch, 1977	1. Employers gave a favorable report on students employed by their firms, with 77.5% rating employees excellent or good.
Felstehausen et al., 1973	1. 73.5% of employees were considered highly suited for the job. 2. Employers were pleased with preparation of former students.
Iowa Department of Public Instruction, 1979	1. Vocationally trained employees were better prepared than nonvocationally trained employees on job skills, technical knowledge, and basic reading and verbal skills. 2. Secondary graduates had higher percentages for job skills, technical knowledge, basic reading skills, verbal skills, and higher overall performance ratings than postsecondary graduates.
Kaufman and Lewis, 1972	1. Ratings of employees yielded similar mean rating for all groups.
Molnar et al., 1973	1. There was no obvious difference between graduates of cooperative programs and graduates of non-cooperative programs.
Market Opinion Research, 1973	1. Vocational graduates were judged better by employers than college preparatory and general curriculum graduates on skills, ability to follow suggestions, work habits, attitudes toward company/employer, and concern for productivity.
Parker et al., 1979	1. All vocational subspecialty areas received above average ratings.
Schowalter, 1974	1. Neither academic nor the vocational curriculum better prepare male graduates for employment one year after high school based on employer's evaluation of satisfactoriness.

The results of the studies focusing on employer satisfaction with vocational/nonvocational graduates indicate the following:

- Vocational education graduates were rated "good" to very good" in job skills, technical knowledge, and work attitudes when compared to other entry-level employees (Iowa Department of Public Instruction, 1977).
- Employers were generally pleased with preparation of former vocational students.
- Vocational graduates were judged better by their employers than college preparatory and general curriculum graduates on skills for entry-level employment, willingness to learn new job skills, work habits, attitudes toward employers, and concern for productivity (Market Opinion Research, 1973).
- Three of the studies that compare vocational and nonvocational students indicate favorable ratings on the part of employers towards the entry-level skills, technical knowledge, and job performance of vocational graduates. Three of the studies reported no differences between the groups.

Four *less rigorous studies* investigated employer satisfaction in a broad manner. Guerra et al. (1974) asked employers if they thought the high schools and the vocational programs were doing a good job. Sixty-five percent of the employers thought the high school was doing a good or adequate job; the corresponding number for the vocational programs is 82 percent. In another study, 91 percent of the employers rated business graduates between "average" and "superior" (Cook et al., 1970). Forty-three percent of the employers in Michigan rated vocational graduates as being better than most persons holding the same job (Michigan, 1971). Forty-eight percent of the employers rated vocational graduates as being as good as most other persons. Chern (1973) found that 24 percent of the employers felt the graduates were well prepared, 36 percent indicated that graduates were well prepared on the whole but with some gaps in training, and 6 percent rated graduates as poorly prepared.

A number of studies investigated specific aspects of employer satisfaction. Howell et al. (1971) and Howell (1968) examined employer satisfaction with home economics graduates. The former study found that employers rated home economics graduates average or above on such aspects as attendance, accepts advice and supervision, cooperativeness, dependability, and adaptable to new situations. Howell (1968) found that 98 percent of the employers rated graduates "well" or "somewhat satisfied" on personal adjustment. The corresponding figure for performance on the job is 94 percent, and for fitting into the job, is 84 percent.

Employer satisfaction with business graduates was investigated in two studies (Kingston, 1970; McLean, 1975). Kingston found that coop graduates were rated higher than non-coop graduates on "attitudes toward others," "work attitude," and "overall attitude." McLean (1975) found that coop and non-coop business graduates were rated similarly, (i.e. between undecided and satisfied). The highest ratings were for "overall competence," "accepts responsibility of job," and "gets along with supervisor."

Kaufman (1968) provided comparative data for vocational and nonvocational graduates. He found that they were rated similarly on occupational knowledge, manipulative skills, personal-social qualities, work qualities and habits, and overall performance and preparation. All of the ratings were average or above. Slick (1974), Talarzyk (1975), and the Ohio study (1978) all found that various aspects of vocational graduates work habits and attitudes were rated average or above by a majority of the employers. No *national studies* were found that addressed employer satisfaction.

II. Education and Training

This section discusses research concerning the educational experiences of secondary-level students. The variables included are basic skill attainment, academic abilities, occupational skill acquisition, attendance/dropout, continuing education patterns, and satisfaction with training.

A. Basic skill attainment. The variable of basic skill attainment concerned the measurement of students' reading, writing and mathematics skills. Generally, the literature reports the results of studies that have used standardized tests such as the Minnesota Statewide Educational Assessment and the Stanford Achievement Test. A problem that is encountered in examining this outcome variable is that of isolating the effect of an educational program from the characteristics that an individual brings to that program. In other words, if individuals enter a program with lower verbal or numerical abilities, is it an effect of the program when they then score lower on the Stanford Achievement Test?

In a *more rigorous study*, Ludeman (1976) assessed the level of mathematics performance related to career and vocational education. The study included 16,000 students from the state of Minnesota. Sixty-two percent (or 9,920) were considered to be vocational education students (defined as having taken at least one vocational education course). All students were given a battery of tests as part of the Minnesota Statewide Educational Assessment (MSEA). MSEA showed that vocational students did not differ significantly from nonvocational students in overall mathematics achievement. However, there were some noticeable differences in performance in some of the areas in the mathematics achievement tests. Students with the most vocational education (defined as two and one-half to three years of vocational education) performed significantly better than the group as a whole in the following areas: knowledge of basic addition, subtraction, multiplication and division; computation with approximate data; solving simultaneous (linear and quadratic) equations; interpolating and extrapolating with a table; using formulas; translating verbal to mathematical statements; solving verbal problems (simple linear with one variable); and solving consumer problems. Students with the *most* vocational education performed significantly below the group as a whole in the following areas: knowledge of the trigonomic terms, identifying graphs of functions, expanding a binomial, and finding the equation of a graph (linear). The author concluded that vocational education students perform better in terms of practical applications of mathematic skills and slightly below the overall mean in more advanced and theoretical mathematical concepts.

In a *less rigorous study*, Custer (1973) evaluated the effectiveness of the cooperative education (Core) program at Martha's Vineyard Regional High School. The attainment of basic educational skills by students enrolled in this program was examined. Subjects in this study all met three criteria: they had Stanford Achievement Test scores for grades seven, nine, and eleven; were enrolled in the Core program for at least two full years and had not transferred into the school system during the time of the study. Sixteen students were finally selected. An additional sixteen students not enrolled in the Core program served as the control group. Both groups were matched with regard to age, sex and IQ scores (within one stanine). All subjects were administered the Stanford Achievement Test during the ninth grade, when students would enter the Core program, and again in the eleventh grade. The results showed no significant differences between the Core and non-Core program students for the group mean of the mathematics achievement scores. However, the Core-program group performed significantly better on the reading achievement portion of the test than did the non-Core control group.

The level of reading achievement for the Core students in the study increased significantly during the period that students were participating in the Core program. There was no significant increase for the non-Core program. The mathematics achievement scores improved slightly for both groups but the improvement was not significant.

Horvath (1973) conducted a study on community college students composed of 229 vocational-technical and 200 college preparatory high school graduates. ACT scores were compared for the students of the two programs. The general conclusions were that vocational-technical students are more proficient in mathematics and natural sciences and less proficient in English and social studies.

Perkins (1973) administered a test battery that was part of the Basic Education Achievement Program of Orange County, Florida to sixty-five vocational education and sixty-five comparison group subjects. Vocational education students scored significantly higher than the comparison group on the vocabulary portion of the battery but showed no significant difference from the comparison group scores on the reading and mathematics scores.

A report entitled *An Identification and Analysis of Effective Secondary Level Vocational Programs for the Disadvantaged* (1968) looked at the Stanford Achievement Test mathematics and verbal scores of 1,305 vocational students at the time of entry into the program and at the time of completion. The sample was representative of five subpopulations: dropouts/potential dropouts (large inner city/ suburban); dropouts/potential dropouts (rural and small city/suburban); mental and/or functionally retarded; delinquents; and non-English speaking minorities. The researchers found that there was little or no achievement gain at the time of exit from the program. Students were four and five grade levels below the norm for both reading and arithmetic achievement scores. There were no significant differences in basic skills attainment between sexes or among the racial subgroups (blacks, Native Americans, Spanish American and Oriental). There was a marginally significant relationship between age and arithmetic achievement scores. No *national studies* were found that addressed the attainment of basic skills.

B. Academic achievement. While academic achievement is related to basic skill attainment, it has a broader interpretation. Academic achievement was generally measured as the grade point average or class standing for vocational, academic, or general students. In a *more rigorously conducted study*, Market Opinion Research (1973) examined the class standing of vocational versus nonvocational students in Ohio. They classified graduates into quartiles based on their academic class standing. The findings indicated that more of those in the top quarter of their classes enroll in college preparatory programs, and more of those in the bottom quarter enroll in the general curriculum. Those in the second and third quarters are spread across all curricula but form a large proportion of those in vocational programs.

In a *less rigorous study* Horvath reported that the first-semester grade point average of the college preparatory students was 2.41, and that of the vocational students was 2.27. A similar pattern of grade point averages was found by Stromsdorfer and Fackler (1973). They did find that co-op students had slightly higher grade point averages than regular vocational students. Hendrix (1968) found no differences in grade point averages for vocational and nonvocational students.

Caldwell (1971) examined the efficacy of a special vocational program for students with a grade point average of 2.0 or lower. He found a statistically significant 15.7 percent increase in grade point averages between the end of spring semester and the end of fall semester 1971.

Andrews and Roberts (1974) examined the high school grade point averages of Arkansas students who had had either four semesters of or no vocational education. Using a Chi Square, they found that significantly more vocational students had grade point averages above "C" than did nonvocational students.

Fetters (1975) compared the grades received in high school for academic, vocational, and general students using the *Class of 1972 data*. He found that 45 percent of the academic, 17 percent of the vocational, and 15 percent of the general students reported receiving mostly A's and half B's. Mostly B's, half B's and half C's, and mostly C's were reported by 53 percent of the academic, 72 percent of the vocational and 71 percent of the general students. Lower grades were reported by 2 percent of the academic, 11 percent of the vocational and 15 percent of the general students.

A series of studies were conducted on the academic achievement of high school students in the Class of 1972 *national longitudinal study*. Flemings, Maroney and Straser (1975) re-evaluated the data from this longitudinal study and found that of the 17,726 students sampled, a significantly larger proportion of academic students scored higher on the academic achievement tests than did both general and vocational students. Creech's (1974) and Fetters' (1975) study generally supported these conclusions. Echternacht (1975) found no difference between vocational and general students in academic achievement.

C. Occupational skill attainment. Few researchers have looked at the attainment of occupational skills by graduates of vocational education programs. This may be due to several reasons. Most studies that report measuring occupational skills are actually assessing the employers' satisfaction with the degree of preparedness of their vocational education graduate employees. Few studies used an objective measure of the level of mastery in a particular area of vocational education of the student upon graduating from the program. Furthermore, there may not be tests available that could adequately evaluate the students' performance. The studies reviewed all used some objective measure such as an achievement test to measure the students' level of mastery of a particular vocational skill.

Two *more rigorous studies* were located that addressed occupational skill attainment (Farrington, 1974; McQuay, 1974). Farrington conducted a study measuring the level of mastery in agricultural mechanics achieved by twelfth grade students enrolled in vocational programs in Ohio. Specifically, the three populations examined were twelfth grade students in agricultural mechanics programs offered by area vocational schools, agricultural programs in local schools, and nonvocational programs in local schools. Out of a total of 156 students surveyed, 77 were from area vocational center agricultural mechanics programs, 41 from local agricultural vocational programs, and 38 from local vocational programs.

All students were given the Agricultural Mechanics Mastery Test which had been developed by the author. Over three-fourths of the students enrolled in agricultural-mechanic programs at area vocational centers correctly answered 50 percent or more of the items on the test. There was no significant difference in the mean scores on tests between agricultural students and nonvocational students enrolled in local schools. Agricultural mechanic students' mean test scores were significantly higher than the scores of either agricultural or nonvocational students enrolled in local schools. The author concluded that students graduating from specialized agricultural mechanic programs at area vocational schools have a higher level of mastery in agricultural mechanics than either agricultural or nonvocational graduates from local schools. However, the results of this study may not be conclusive since at the time of the publication of this study, no validity studies had been conducted on this newly developed test.

McQuay (1974) conducted a study that examined the level of shop achievement among high school students enrolled in specific vocational programs in the Williamsport, Pennsylvania area. The sample consisted of seventy-one students who had entered into the specialized vocational program in the eleventh grade and completed their first year in the program, and forty-six students from outside of Williamsport who had entered their program in the tenth grade and had completed two years of training. Each group of students was administered the California Short Form Test of Academic Aptitude (CSFTAA) and the Ohio Trade and Industrial Education Achievement Test (OTAT). An analysis of covariance was run on the data. The results indicated no significant difference between the one- and two-year groups in shop achievement as measured by the OTAT. However, when academic aptitude was controlled, the two year group performed better on the OTAT than the one year group. When both groups were broken into subgroups by different vocational shops such as automotive, machine trades, auto body, and carpentry, no significant differences were found between the one and two year students. The author concludes that when academic aptitude is controlled the students who received two years of shop instruction had a higher level of shop achievement than the student completing only one year of their vocational program. According to the author, the reason why no difference in achievement was found between students when they were divided into subgroups was that the subgroups were too small.

Three *less rigorous studies* addressed the attainment of specific occupational skills by graduates from secondary schools.

A comprehensive evaluation of a cooperative education program for the development of occupational skills, work habits and attitudes of Idaho students was conducted by Merrill (1974). Three hundred seventy-eight graduates from vocational education programs for the years 1971, 1972, and 1973 were surveyed. These programs included secretarial office practice, industrial mechanics, consumer electronics, health occupations, and auto mechanics. Students were given a test in their specialty area prior to program entry. The same test was readministered upon graduation. The results were reported in a very confusing manner. The mean test scores for each program are given but no comparisons are made or conclusions drawn. It appears that vocational graduates scored higher on the specific occupational posttests than prior to their entry into the program.

The second study involving secondary vocational students was conducted by Horner and his associates (1969). The effects of two different teaching approaches on the attainment of specific occupational skills—the principles approach and the traditional approach—were examined. Briefly, the principles approach emphasizes that instruction in agricultural subjects, such as animal, plant and social sciences, should be centered around basic biological principles. Agricultural mechanics subject matter should include background information in the physical sciences. Farm management and marketing subject matter should be developed around basic economic principles. The traditional approach, on the other hand, emphasizes problem-solving procedures. The subjects in this study were not identified, but twenty-four Nebraska schools participated.

Students were administered achievement tests at the beginning of the year as a pretest and the same test at the end of the year for each of the three years in the program. The tests given were the principles of animal, plant, and social sciences in the 1965-1966 school year, the principles of agricultural mechanics for the second school year, 1966-1967, and the principles of agricultural marketing and management for the 1967-1968 school year. Results from the tests were used to compare the two approaches of teaching in the agricultural programs. The results showed that students enrolled in the principles approach programs performed significantly better on the animal, plant, and social science and the agricultural mechanics test than did students enrolled in the traditional program. There was no significant difference between the group on the principles of agricultural management and marketing test.

The author commented that the tests were not biased towards the principles approach despite their titles. The conclusion stated is that students achieve a higher level of specific occupational skills when instruction is based on or centered around the basic underlying principles of the subject.

Both of these studies suffer from poor reporting of methodology. There is little documentation given on how the tests were constructed and administered. Also, these studies were conducted for the purpose of evaluating a specific program and are not generalizable beyond that program.

Paulter (1975) examined the occupational skill attainment of vocational graduates by observing their performance on licensing examinations. He found that 93 percent of the graduates of any licensed occupation passed the appropriate examination.

No *national studies* were found that addressed the attainment of occupational skills.

D. Attendance/dropout. Several studies have examined dropouts from vocational education programs. The rates for attendance and dropout were generally obtained from school records. The more rigorous studies discussed below attempt to explain why students are dropping out. This discussion is followed by the results of less rigorous local, state, regional, and national studies.

Resta and Temple (1978) conducted a study comparing dropouts with nondropouts from secondary vocational education programs in New Mexico. The sample was 400 students from different areas within vocational education. This included nonoccupational and occupational home economics, office education, industrial arts, trades and industrial education, health occupation, agriculture, and distributive education. Two hundred fourteen dropouts were identified. Most of the information was obtained from school records, mail surveys, and some evaluations of the dropouts by school personnel. Reports show that males have a higher dropout rate than women. Males drop out for school related reasons whereas women drop out due to personal reasons. Among the eight vocational areas, students dropped out because of school-related reasons more frequently than those in other programs. Distributive education had the largest dropout rate (10.8 percent), while office education had the lowest rate (3.3 percent). Students in the ninth grade dropped out because of school-related reasons more often than in any other grade. Students were most likely, however, to drop out during the tenth grade.

When dropouts were examined in terms of their ethnicity, several factors emerged. Native Americans reported a lack of interest more often than any other reason for dropping out of the program. Black males in vocational programs dropped out at a rate of 21 percent, the highest of all groups when compared by sex and race. The author concludes that dropout rate is a function of many variables. One variable in particular was prominent: in programs that are traditionally dominated by one sex the opposite sex in the program had a much higher dropout rate.

In a study by Bergstrad, Esser and Nelson (1979) comparisons were made among three different programs: vocational, nonvocational, and practical arts in regard to the number of dropouts. Of the 702 students enrolled in the three programs, 60 dropped out before completing their education. There was, however, no difference in the percentage of dropouts from the three program areas.

An evaluative study of Martha's Vineyard Regional High School Core program (Custer, 1973) found that the attendance rate for the forty-nine students enrolled in the Core program was higher than the overall attendance rate of the entire school.

A study by Herrnstadt, Horowitz, and Sum (1979) on the transition from school to work for cooperative education graduates investigated reasons for dropping out of the programs. From the questionnaires and interviews of 320 former students, two findings appeared concerning school attendance. First, in general the reasons for dropping out of school were unrelated to the type of program the student was enrolled in. However, the authors also found that educational programs that include outside work experience provide additional motivation to attend school more frequently than general academic programs.

Troutman and Breshears (1969) conducted a study evaluating training programs of vocational education in Arkansas. A mail questionnaire was sent out and returned by 987 former students of various vocational-technical schools and other vocational training programs. The findings were that 72 percent finished their required course work. Of those who did not finish, 33 percent left because they had accepted a job. Fourteen percent quit because they had lost interest in the program or because they felt they had learned enough. Other reasons cited were lack of finances, poor health, military obligations, and other personal reasons.

Brantner and Enderlein (1972) conducted a study that investigated whether it is possible to predict vocational retainers and dropouts by tests like the General Aptitude Test Battery (GATB), Occupational Values Inventory (OVI), the California Tests of Mental Maturity (CTMM) and grade point averages. Tests were administered and grade point averages were collected from the students in the ninth through the twelfth grade. The sample size was 191 retainers and 36 dropouts. Certain significant findings were reported. The two best predictors of dropouts were number of days absent and the grade point average. Dropouts also tended to be less vocationally mature but scored higher in the values of prestige and security on the OVI. The authors concluded that though dropouts valued those things best satisfied by the world of work, they lacked the vocational maturity to see the importance of inschool experience necessary to satisfy these values.

Most studies that examine dropouts merely report the raw number of students who have left the program. Very few have followed the dropouts further to determine why they left school. Results of some follow-ups are confusing. Some studies have reported reasons for leaving school totally unrelated to the type of program (Herrnstadt, Horowitz, and Sum, 1979; Ballo, 1971). While Resta and Temple (1978) reported that females left for reasons unrelated to school whereas males left for school-related reasons, all that is certain is that dropouts leave school for a multitude of reasons, which may or may not be related to school.

Some interesting findings have emerged regarding dropout rates and whether or not the programs involve outside work experience. Herrnstadt et al. (1979) reported that outside work experience provided further motivation to attend school. This conclusion may be partly supported by Custer (1973) who found that both dropout and absentee rates in cooperative education programs (which involve outside work experience) were lower than in other secondary education programs. One possible explanation of this phenomenon was given by Brantner and Enderlein (1972) who found that dropouts were vocationally immature but at the same time valued prestige and security. According to these authors, dropouts leave school because they lack the maturity to seek the advantages of education and looked to the world of work to satisfy their needs for prestige and security. The results of Troutman and Breashears (1969) partially support the conclusion that students drop out to take a job. Although the data are by no means conclusive, further research into the relationship between outside work experience and the dropout rate is warranted.

The following results of *less rigorous studies* provide further support and evidence for the conclusions drawn from the studies presented above.

Stromsdorfer and Fackler (1973) reported data that seemed to confirm results of the Herrnstadt et al. (1979) study: cooperative vocational progams had fewer dropouts and less absenteeism than noncooperative programs. A study conducted by the Kansas State Master Planning Commission (1972) investigated the reasons why dropouts left school. Although the sample size is unavailable, the results seem to coincide with those of Resta and Temple (1978) which were presented earlier. The reason given most frequently was "tired of school" (21 percent). Other reasons included financial problems (15 percent) and marriage (13 percent).

Matthews (1976) examined programs that focused on disadvantaged and handicapped youth. He reported that of the 1,739 students surveyed, 22 percent dropped out from their coordinated vocational education program. Most of these dropouts were employed; 47 percent in a field related to their training.

A study entitled *An Identification and Analysis of Effective Secondary Level Programs for the Disadvantaged* (1968) reported that dropout rates were larger for inner city/large suburban area students than for rural/small city students. A larger percentage of dropouts came from the highly disadvantaged level than from the moderately disadvantaged category. The dropout rate for the mentally/functionally retarded was much higher for vocational programs than for programs that combined vocational and comprehensive education.

Caldwell (1971) examined attendance rates of students in a special program for students with grade point averages of 2.0 or lower. Using school records, they found that attendance decreased for program participants between the two observation periods.

One study reported only raw data on dropouts which were uninterpretable (e.g. Becker and Bender, 1968). Other studies reported dropout data in conjunction with the data on other outcome variables: salary, employment, job and training satisfaction. These are examined in the sections dealing with those specific variables.

In a *national study*, Nolfi et al., (1977) compared the number of dropouts from four different high school programs. The highest dropout rate was among vocational students regardless of the race and sex of the individual.

Combs and Cooley (1968) concluded, based on results gathered, that the largest number of dropouts in vocational education, agriculture, commercial and business leave school in the first few years of high school. The same is true of college prep students. On the other hand, general education students show an increasing dropout rate the longer they remain in school.

A reanalysis of the National Longitudinal Survey data for young women supported the claim that practical studies encourage young people to complete at least a high school education (Grasso and Shea, 1979). The results for young men yielded mixed results. Among the young men who began a high school year in a certain curriculum, those in a general program were somewhat more likely than were their vocational peers to complete that year. However, some students move from one curriculum to another, thus yielding a net increase in vocational education enrollments from one year to the next. This shift to a vocational education curriculum contributes to a positive association between enrollment in a vocational program and grade in high school. Thus, for young men, cross-sectional and longitudinal data disagree on the ability of vocational education to prevent dropouts.

E. Continuing education. This variable concerns the number of graduates of secondary institutions who continue their education. Examining the percentage of vocational versus nonvocational students who continue their education is relevant in light of the hypothesis that vocational students are tracked into a program that provides fewer opportunities to further their learning and leads to lower level and lower paying jobs than students in nonvocational programs. The data presented should not be misconstrued as providing information about the students' preparation for further education, although it does provide information that may provide some insights into this hypothesis. A large number of these studies simply record the number of students who continue their formal education after graduation. For this reason, a table has been constructed that gives the results of these studies concerning this outcome variable. Some studies do attempt to find out what kind of postsecondary institution these students attend, and these studies will be reviewed. Before reviewing the studies that explore postsecondary education in greater detail, the table will be described and explained.

A summary of the results of twenty-six more rigorous and thirteen less rigorous studies that address the outcome variable, continuing education, is presented in Table 10. Appendix 5 contains a table that lists each study by the author and publication date, the sample size and the results.

There are several findings common to most of the *more rigorous studies*. Of those studies that compared vocational graduates to nonvocational graduates on the percentage going on to further education, most reported that a larger percentage of nonvocational students continue their education at the postsecondary level (Katz et al., 1974; Kaufman and Lewis, 1972; Duval County School Board, Jacksonville, Florida 1979; Conroy and Diamond, 1976). Some studies contradict these findings and show that there is no difference in the percentage of vocational and nonvocational students who continue their education (Market Opinion Research, 1973; Oregon Department of Education, 1975). This may be due to how they classify vocational and nonvocational as well as what they consider to be a postsecondary institution. For example, some studies ask only whether students go on to community or four-year colleges whereas others more broadly defined postsecondary institutions to include any formal education received after graduation. Finally, the fact that almost all of these data are self-reported may also account for differences in the results. When vocational education is segmented into program areas, it becomes increasingly difficult to see commonalities among the studies. Comparing the different programs examined within each study seems to indicate that generally a large percentage of business students go on to higher education.

Several studies were not included in the table because they investigated in greater detail the type of postsecondary programs vocational and nonvocational students attend. A study prepared by the Career and Vocational Education System of the Oregon Department of Education (1977) found that of the 2,754 vocational graduates surveyed, 60 percent were continuing their education. The breakdown of this 60 percent by type of educational institution was 40 percent in the state schools of higher education, 38 percent in community colleges, 5 percent in independent colleges, and 6 percent in private vocational schools. Although no reasons were given for continuing their education, over 30 percent responded that they had received poor preparation in their secondary school in reading, writing and speaking. Subjects from general/academic programs numbered 1,993. Of these, 75 percent of them were continuing their education. The breakdown by institutions was 48 percent in the state schools of higher education, 24 percent in community colleges, 9 percent in independent colleges, and 2 percent in private vocational schools. A separate category, "other," showed that 11 percent of the vocational graduates and 17 percent of the nonvocational graduates were attending unspecified educational institutions.

TABLE 10

SUMMARY OF THE NUMBER OF STUDIES REPORTING PERCENTAGE OF GRADUATES WHO CONTINUE THEIR EDUCATION BEYOND THE SECONDARY LEVEL

	Percentage Continuing Education							
	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-100
More Rigorous Studies								
Agriculture	1	2	6	4	0	0	0	0
Distributive Education	3	8	4	1	2	0	1	0
Home Economics	0	4	4	2	1	1	1	0
Health	1	2	5	7	2	0	0	0
Business & Office	1	3	3	9	3	0	0	0
Technical	0	1	0	0	0	0	0	0
Trades & Industry	1	7	5	3	1	1	0	1
Vocational	0	6	8	3	4	1	0	0
Subtotal	7	33	35	29	13	3	2	1
Nonvocational	0	0	0	0	0	2	0	4
Less Rigorous Studies								
Agriculture	0	0	1	2	3	0	0	0
Distributive Education	0	1	0	1	0	0	0	0
Home Economics	0	1	2	0	0	0	0	0
Health	0	0	0	0	2	0	0	0
Business & Office	0	0	2	1	0	0	0	0
Trades & Industry	0	2	1	1	0	0	0	0
Vocational	3	3	2	2	0	0	0	0
Subtotal	3	7	8	7	5	0	0	0

A study by Burgess (1979) a follow-up of graduates from Warren Consolidated Schools (Michigan), reported that out of 998 vocational graduates, 41 percent were continuing their education as compared to 57 percent of the 1,403 nonvocational graduates surveyed. The most frequently attended postsecondary institution by former vocational students was the two-year community college, whereas most nonvocational students went to four-year colleges and universities.

Most studies do not report data on the percentage of students entering unconventional forms of continuing education (e.g., apprenticeship programs, military training, etc.). This may be because most researchers have found a small frequency of students in the alternate forms of education and therefore put them together in one general category, "other." Few studies bothered to follow up students who have entered the military. Those studies that do examine these types of education in general report frequencies of student enrollment in such low numbers that it would not be valid to draw any conclusions at this time (Burgess, 1979; Market Opinion Research, 1973).

Probably the weakest facet of these studies is the fact that most do not explain why the students are continuing their education. This reason could easily be determined by simply looking at the possible relationships between continuing education and the prospect of employment, better wages, dissatisfaction with their secondary education, and a whole host of other variables. Until evaluative research on this outcome variable investigates reasons why some vocational students continue their education, the research will simply record the frequency of responses and will, therefore, not be as useful as possible.

The results of the nineteen *less rigorous studies* indicate that the percentage of vocational students who continue their education beyond the secondary level generally ranges from 11 to 30 percent. This finding tends to substantiate the results for the rigorous studies presented above. This is based on the findings of the Ohio Department of Education (1979), Quesada (1972), Iowa Guidance Surveys (1977), Cook et al. (1970), Hess (1975), Crim and Ross (1976), Auburn University (1974b), Strong (1970), Franken and Earnhart (1976), Bennett and Cvancara (1971), Sunnyside School District (1974), Williams (1971), and Cummins and Bender (1972).

In a national study, Grasso and Shea (1975) found that enrollment in a vocational program, among women as well as men, reduces the likelihood of high school graduates completing at least one year of college. When training other than college is considered, occupational program graduates show no disadvantage.

Creech (1977) found that 29 percent of vocational, 40 percent of general, and 81 percent of academic graduates of the *Class of 1972* continued their education beyond the secondary level. Similar percentages were reported by Fetters (1975; 1977), Eckland (1976), and Tabler (1976).

F. Satisfaction with training. This variable was investigated by most of the studies that were reviewed in this report. However, not all of the studies address this variable in the same manner. In some research, satisfaction with training is the degree to which the training prepared the graduates for work (Weiss, 1971). Others asked from a broad prospective whether the graduates were satisfied with the education they received (Hamby et al., 1978; Richardson, 1975; Preston, 1976; and Wilms, 1974). A few studies asked in greater detail what aspects of the students' education was satisfying (Market Opinion Research, 1973; Kaufman and Lewis, 1972; Hall, Gray and Berry, 1975; Bergstrand, Esser and Nelson, 1979; Elson and Gerken, 1979).

Because of the fact that most researchers asked only whether students were satisfied with their education and not why they were satisfied or what facets they were most satisfied with, interpretation of the results is quite limited. These limitations are also compounded by the fact that most of the data are very homogeneous. Students' evaluations tended to be grouped very closely on the high end of the scales in almost all the studies. This makes it very difficult to derive any conclusions as to which students were more satisfied than others. Also, the percentages of students satisfied with their education become less descriptive in light of the lack of variance among the responses. For these reasons the studies have been summarized on the basis of whether or not they report a majority (i.e., 50 percent or more) of students were satisfied with their training (most studies report percentages in the 80s and 90s).

All of the *more rigorous studies* found that a majority of their students, 50 percent or more, were satisfied with the training they had received (Dinger, Meyers, and Berner, 1973; Duval County School Board, 1979; Elson and others, 1976; Elson, 1978; Elson and Gerken, 1979; Enoch, 1977; Felstehausen, 1973; Richardson, 1975; Robon, 1977, Swanson, 1976; Troutman and Breshears, 1969; Wilms, 1974; Loeb, 1973; Katz, Morgan, and Drewes, 1974; Kaufman and Lewis, 1972; Ballo, 1971; Burgess, 1979; Career and Vocational Education Section, Oregon Department of Education, 1978; Market Opinion Research, 1973; McCowan, Mongerson, and Carter, 1971; Bergstrand, Esser, and Nelson, 1979).

Similarly, the following *less rigorous studies* found that a majority of the respondents were satisfied with their training: Michigan (1971) (with knowledge acquired), Howell (1968), Washington (1975), Auburn (1974 a and b), Paulter (1975), Slick (1974), Righthand, 1977, and the Advisory Council for Vocational Education (1978). Only one study found that less than a majority of the graduates were satisfied with the "skill acquired." (Michigan, 1971).

Eninger's (1972) study of large-city vocational graduates indicated that 95 percent of them felt their training was good or excellent preparation for their present jobs. He reported similarly high percentages for the individual vocational education program areas.

Grasso and Shea (1979) concluded, "Blacks report greater satisfaction than whites with school, and less dissatisfaction. Among the boys, occupational students are the least satisfied, but this fact is probably unrelated to their program of studies, since large numbers name a vocational subject as their favorite. Among girls, curricular differences in satisfaction are small (p. 38)." Nolfi (1960) reported similarly positive responses.

Although the studies discussed above seem overwhelmingly to support the notion that the majority of vocational students are satisfied with their education, some caution in interpreting these results is advised. One study which seems to indicate a possible source of problems with this data was conducted by Kaufman and Lewis (1972). When asked whether their education provided personal or vocational improvement, 100 percent of the high school vocational graduates responded that it did. Yet, when asked to make suggestions for program improvements, 49 percent recommended needed improvements. It may be that if the question is worded in a different manner, researchers would get different results. One way to improve the quality of the results would be to go into greater detail and ask what specific areas of the program the student was satisfied with. A study that does this will be reviewed in the postsecondary section of the report (Hall, Gray and Berry, 1975).

III. Ancillary Effects

This section of the report treats what might be termed the ancillary effects of vocational education. It examines the effect of vocational instruction on the students' aspirations, attitudes, values, and feelings of success.

A. Aspirations. The outcome variable "aspirations" was measured by asking students about their plans after high school. The students were asked to indicate the type of occupation they planned to engage in, or if they planned to go on to college. In a *more rigorous study*, Ludeman (1976) examined the career aspirations of seventeen year olds at tending Minnesota public and non-public schools. The variable was operationalized by having the students choose from the following career levels to which they aspired: semi-skilled, skilled, or professional. Their responses were analyzed by the number of years in vocational technical education (none, 1/2-1, 1 1/2-2, 2 1/2-3). The results suggest little variation in the percentage choosing semi-skilled across years; the responses ranged from 7 to 9 percent, with an average of 7.75 percent. The responses showed a slight but steady increase in the percentages choosing the skilled occupational level as the years of vocational education increased. Twenty-five percent of those with no vocational education chose "skilled," while 38 percent of those with 2 1/2-3 years of vocational education chose that option. This pattern was reversed for the professional option with 53 percent of those with no vocational education and 46 percent of those with 2 1/2-3 years education choosing that option.

Another more rigorous study found that post-high school plans to attend college of students in Altoona, Pennsylvania declined overall from ninth to twelfth grades (Strickler, 1973). In the ninth grade 71 percent of the academic students planned to attend college and in the twelfth grade 62 percent had the same plans. Of the vocational students, 46 percent had plans to attend college in the ninth grade, but the number decreased to 31 percent in the twelfth grade. Data were also reported for the secretarial, business, and home economics curricula. These results indicated a very low percentage planning to attend college in both the ninth and twelfth grades (ninth grade results ranged from 14 to 37 percent and twelfth grade from 14 to 33 percent).

In a *less rigorous study*, Jacob et al. (1975) examined the career aspirations of West Virginia students and found that 63 percent of the vocational students and 22 percent of the nonvocational students planned to get a job after high school. The percentage of vocational students planning to attend a four-year college was 9 percent, as contrasted with 51 percent of the nonvocational students who planned to do so. However, the results of this study are dubious because of contamination in the vocational group. This group was selected from school lists to represent "vocational students;" however, the group included general and academic students who reported that their course of study included vocational courses.

The aspirations of vocational vs. nonvocational students were investigated in four *national studies*. Zeller (1970) reported changes in aspirations of men aged fourteen to twenty-four between 1966 and 1967. The sample consisted of males who were enrolled in high school during both years of the study and who aspired to more than sixteen years of education in 1966. He found that 17 percent of the white and 16 percent of the black vocational students had lowered their aspirations in the one-year period. The figures for college preparatory students were 17 percent for whites and 31 percent for blacks, and for general students they were 24 percent for whites and 37 percent for blacks. These findings are difficult to interpret without knowing the general picture of the aspirations. For instance, the vocational students may have had a more realistic picture of their aspirations and therefore had less need to change. It is interesting to note the larger percentage of black students who lower their aspirations in the college preparatory and general curriculums.

Fetters (1974a; 1976) examined career aspirations using the *Class of 1972* data. He found that 79 percent of the academic, 34 percent of the general, and 18 percent of the vocational students planned to continue their education at a four- or two-year college. Of those planning to work after high school, the percentages were 8 percent for academic, 33 percent for general, and 46 percent for vocational students.

Grasso and Shea (1979) reanalyzed the NLS data concerning aspirations held by general, college preparatory, and vocational students to attend college. Their findings support those of Fetters, in that four-fifths of the academic, half of the male general, one fourth of the male vocational and one sixth of the female vocational students aspire to college. They also found a trend for the number of vocational students who aspire to college to decline as the number of years of high school completed increased.

B. Attitudes and values. The outcome area of attitudes and values is fairly broad. It concerns the students' attitudes toward their educational experiences, as well as the development of occupational values and maturity. Students were asked to indicate the most important thing they learned in high school, and their reasons for choosing or changing their curriculum. Occupational values and maturity were typically measured using a standardized test such as the Occupational Values Inventory or the Vocational Development Inventory. Students were also asked to respond to their feelings of acceptance in high school and to indicate their most- and least-liked courses.

The results of five *more rigorous studies* of student attitudes are reported below. Attitudes toward educational experiences of vocational graduates from federally reimbursable programs were contrasted with those of a nonvocational group composed of graduates from general, college preparatory, and nonreimbursable vocational programs (Market Opinion Research, 1973). The vocational and nonvocational groups consisted of graduates of Ohio schools who were either nineteen or twenty-five years old at the time of the survey. Their attitudes were revealed by their responses to three questions.

First, the subjects responded to the question "What is the single most important thing you learned in high school?" A statistically significant larger percentage of vocational students responded with the name or content of a course (46 percent and 19 percent, respectively). A larger percentage of nonvocational students responded "learning to get along with, communicate with people" (36 percent and 27 percent, respectively).

The second and third questions related to choice of a program and reasons for changing programs. A statistically significant difference was found in the percentage of vocational vs. nonvocational students who gave as the single most important reason for choosing their curriculum that it was what they wanted (69 percent and 51 percent, respectively). An interesting pattern emerged in changes in course programs. Half of the vocational graduates who had changed programs in high school moved from a college preparatory to a vocational curriculum while the remainder had moved from general to vocational or within vocational curricula.

Strickler (1973) examined the occupational values and vocational maturity in a longitudinal study of students in the ninth grade in 1969 and again in the twelfth grade in 1972 in Pennsylvania. The scores on the Occupational Values Inventory (OVI) indicated that most occupational values tend to change during the high school experience however, the change is largely independent of the particular curriculum in which the student is enrolled and is more dependent on time. Enrollees in the home economics curriculum showed no significant changes from ninth grade. The business and academic curricula recorded the largest number of significant changes.

Vocational maturity was investigated by use of the Vocational Development Inventory (VDI). As with the OVI, a significant difference was found between the ninth and twelfth grade but the change did not differ among the various curricula. Vocational students did exhibit a lower twelfth grade mean score than students in the other curricula. A high score on the VDI implies that as individuals mature, they will be able to make better decisions concerning a career.

Brantner and Enderlein (1972), using the same sample as Strickler, examined the Occupational Values Inventory in relation to retention in vocational programs. They found that vocational retainers had higher scores on two of the OVI subscales "Interest and Satisfaction" and "Salary" while dropouts scored higher on the subscales "Prestige" and "Security." On the measures of cognitive ability, a nonverbal test, a verbal test, and the California Test of Mental Maturity, vocational retainers scored higher than dropouts. This study is discussed in more detail in the section concerning secondary school attendance and dropout.

Hu, Lee, Stromsdorfer and Kaufman (1968) studied the occupational interests of students from Pennsylvania cities six years after graduation. They operationalized this variable by asking subjects to indicate whether their job fit in very well, fit in only moderately, or did not fit at all with their career interests. They found that vocational-technical graduates had .28 fewer jobs that did not fit in at all with their career interests than nonvocational-technical graduates had. The authors concluded that vocational-technical training has in fact accomplished its objective: to prepare workers for employment in their areas of training.

In Kaufman and Lewis' (1968) attitudinal study in Pennsylvania, they examined feelings of acceptance in school for vocational, academic, and general students. When asked if they really felt a part of their school, the subjects indicated differences by curriculum or by sex in their responses. The range of responses of those who felt really a part of their school was from 83 percent for general females to 92 percent for academic females. The modal response for all groups was 86 percent. The responses to the question "Did you feel looked down on in your school?" suggested that vocational and general females did feel looked down on slightly more than academic females (14, 16, and 8 percent respectively). The male vocational student's response indicated this feeling more often than the response of male general and academic students (29, 9, and 3 percent respectively).

The results of three *less rigorous studies* of student attitude are discussed below. Franchek and Meehan (1977) used a measure of career maturity similar to that used by Strickler (1973) to assess students' employability skills. They found that both vocational and nonvocational students scored above the national norm on the subtests Knowing About Jobs and Choosing a Job, but slightly below the national norm on Attitudes. Only slight differences were reported between the vocational and nonvocational groups.

A study limited to trade and industrial students in Alabama revealed that the majority (74 percent) of the students felt that they had adequate job or occupational information and school experiences to make a realistic career choice (Auburn University, 1974). It is notable that 24 percent felt that they did not have adequate information. In contrast to these findings, Kaufman et al. (1968) concluded that choice of a high school curriculum was determined by factors beyond the control of the individual: sex, IQ, social and economic conditions of the family.

A study of Texas vocational graduates revealed that the majority considered their program helpful in exploring career opportunities (72 percent), and in understanding the world of work (82 percent) (Texas Advisory Council for Technical/Vocational Education, 1978).

At the *national level*, the *Class of 1972* data were used to investigate changes in students' views of their control of their environment, and orientation toward work, community, and family goals (Fetters, 1974b). Academic students were significantly higher in ratings of control of their environment. Vocational students' orientation to work was higher than for general or academic students. The three goals were very similar on ratings of community and family goals.

Grasso and Shea (1979), using the NLS data, examined the best and least liked courses. They found that thirteen times as many young men mentioned vocational courses favorably as unfavorably. Five times as many females gave vocational and commercial subjects a positive rather than negative rating.

C. Feelings of success. The outcome variable "feelings of success" was measured by asking students to indicate the aspects in their educational experience in which they felt successful. The aspects ranged from job and career courses to meeting people and having fun. Self-concept was also examined by asking students to react to such statements as "I take a positive attitude toward myself." This is a difficult concept to measure, yet it is an important effect of an educational program.

In the one *more rigorous study*, feelings of success were contrasted for vocational students in reimbursable programs with those of nonvocational students from general, college preparatory, and nonreimbursable vocational programs (Market Opinion Research, 1973). There were few differences in the feelings of success in high school of vocational graduates when compared to those feelings among graduates of other curricula. Vocational education graduates felt more successful in job and career courses but less successful in sports and having fun than graduates from the other curricula.

A *less rigorous study* of vocational students five years after graduation was conducted in Texas to identify ancillary benefits/gains from vocational education aside from job placement or earnings (Texas Advisory Council for Technical/Vocational Education, 1978). Eighty-one percent of the students responded that their program had helped them understand their own potential. Eighty-three percent felt that they had learned to get along with people. Seventy-four percent felt that the program had been helpful in developing their decision-making skills. These findings suggest that the majority of the graduates are reaping ancillary benefits in addition to job placement and earnings.

An examination of the *Class of 1972* data for graduates one and one-half years out of school reveals similarly positive self-concepts for students from the vocational, general, and technical programs (Fetters, 1974b). A preposttest suggested that students from all programs were at a similar level in 1972 and that they had gained approximately to the same degree in 1973. Fetters (1975) also examined self-concept by asking students to agree or disagree with specific comments. For example, 94 percent of vocational, 95 percent of general, and 95 percent of academic students agreed with the statement: "I take a positive attitude toward myself." A similar pattern was revealed for other statements such as "I am able to do things as well as most other people."

D. Citizenship. Citizenship was most frequently defined as voting behavior. One study asked students if their program had been helpful in making them become responsible citizens (Texas Advisory Council for Technical/Vocational Education, 1978).

Two *more rigorous studies* examined the effects of high school curriculum on voting and other civic activities. Conroy and Diamond (1976) in a statewide study of Massachusetts secondary students, used a rating scale of frequently, average, and infrequently to rate students' voting in local, state, and national elections. They found no difference between occupational and nonoccupational students who attended postsecondary school. Students who did not attend postsecondary school voted least, with occupational students who did not attend postsecondary school exhibiting the most infrequent voting behavior.

In Hu, Lee, Stromsdorfer, and Kaufman's (1968) study of voting behavior, the researchers found no difference among the various curriculum graduates. They concluded that if voting behavior is a measure of citizenship and social participation, then curriculum alone does not have any statistically significant impact on socialization. It could be that the aggregation of data obscures important interrelationships among variables, but on net, there was no statistically significant difference among curricula either for voting behavior in the 1966 primary elections or in the 1964 Presidential election.

Two *less rigorous* studies were located which addressed the variable "citizenship." A majority of the graduates (68 percent) of Texas vocational programs felt that their program had been helpful in making them become responsible citizens (Texas Advisory Council for Technical/Vocational Education, 1978). Eighteen percent felt their program had been of very little help or no help at all in this regard.

The Ohio Department of Education (1979) reported on its 1978 vocational program completers by specialty areas who said they had voted in the six months since completing their job training program. The overall state average was 22 percent at the secondary level, with the highest areas being distributive education (41 percent) and agriculture (55 percent). The lowest areas were health (4 percent) and home economics (14 percent).

No *national studies* were located which addressed citizenship behavior.

Postsecondary Level Studies

The results for the postsecondary level studies are presented in a format similar to that of the secondary level studies. The typical manner of measurement for each variable was described throughout the secondary section; therefore such description is not repeated here. Description of the measurement process is included in this section only for variables for which it differed between the secondary and postsecondary level studies (e.g., aspirations). Otherwise, the interested reader is referred to the introduction of each variable in the secondary section.

I. Employment

This section contains a discussion of research related to the employment experiences of postsecondary program leavers. The variables included are employment and unemployment, relation to training, earnings, employee satisfaction and employer satisfaction.

A. Employment and unemployment. The research concerning employment and unemployment of postsecondary program leavers is discussed in two parts. First, studies that used vocational versus nonvocational comparison groups are discussed. Second, studies which examined differences among the vocational education subgroups are discussed.

Four *more rigorous studies* were identified that compared vocational and nonvocational curricula at the postsecondary level. One study was statewide in scope while the remaining three were locally based.

In the statewide study (Bowlby and Schriver, 1969), fifty-eight rigorously matched pairs of postsecondary vocational education graduates from Tennessee Area Vocational Technical Schools were compared with secondary graduates without postsecondary training on several measures focusing on employment. At the time of the survey, the postsecondary vocational graduates had been out of school for one to six years. Bowlby and Schriver reported that the vocational graduates experienced significantly fewer nonwork weeks and enjoyed a significantly lower unemployment rate than the participants without postsecondary vocational training.

Shymoniak (1972) studied vocational and general education 1969 graduates from three community colleges in the Los Angeles, California area. The 121 vocational graduates were broken into five groups: unrelated vocational (graduates who were employed in jobs not related to their vocational training), office program graduates, health program graduates, trade and industry graduates, and technical graduates. Shymoniak found that the general education, unrelated vocational and health program graduates experienced similar levels of unemployment during the first two years after graduation. However, the office, trade and industry, and technical graduates experienced significantly *less* unemployment than general education graduates during the first two postgraduation years.

DeVaney (1974) surveyed students who had taken at least twelve units of credit from Eastern Arizona College between the years 1968 and 1973. Of the 890 persons responding to the 1973 follow-up survey, 212 had been enrolled in vocational programs; 473 in the transfer program; 110 in the general program; 53 could not be classified in a program group; and 42 represented a special follow-up effort aimed at Native American ex-students. DeVaney reported that 64 percent of the vocational group, 50 percent of the transfer students, and 43 percent of the general group were employed in a full-time job. However, these results should be interpreted with reservation due to rather low response rates among the groups (between 31 and 42 percent). In addition, the author reported that women were more likely to have responded to the questionnaire than men, and that respondents tended to have higher grade point averages and ACT scores than nonrespondents.

The most recent study examining vocational and nonvocational programs at the postsecondary level was published by Robon (1977). Robon surveyed 112 secondary business program graduates, 94 two-year college business program graduates, and 124 four-year college business administration graduates. All the participants had graduated during the 1974-75 academic year, and the follow-up survey was conducted in the fall of 1975. The results of the survey demonstrated that at each successive level of education, the number and percentage of graduates employed full-time increased. Fifty-four percent of the secondary graduates, 69 percent of the two-year college graduates, and 78 percent of the four-year college graduates identified themselves as employed full-time.

Overall, these four studies suggested that postsecondary vocational education graduates experienced less unemployment than secondary graduates without postsecondary vocational training. In addition, these vocational education graduates tend to have higher employment rates, at least in the first few years following graduation, than students from general education or transfer postsecondary curricula. However, Shymoniak (1972) found that while some vocational program areas showed lower unemployment rates than nonvocational areas, other vocational program areas demonstrated unemployment rates similar to those of the nonvocational areas. Finally, none of the studies presented information suggesting that vocational graduates suffered higher levels of unemployment than nonvocational graduates.

In a *less rigorous* study using matched samples, Anthony (1971) compared eighty-three male postsecondary technical institute graduates and eighty-five male secondary graduates without postsecondary vocational training. Both of these groups had graduated from high school in 1963-65. In addition, a third group of 101 randomly drawn men without postsecondary vocational training was included in the study. These men graduated from high school in the years 1960-67.

All the participants were drawn from the Columbus, Ohio area. Anthony found that a statistically significant larger percentage of high school graduates (37 percent) experienced some unemployment than the technical institute graduates (29 percent). However, the interpretation of this result was weakened by a low response rate (23 percent) among the secondary level groups.

Eighteen *more rigorous studies* were identified that addressed the outcome of employment/unemployment for postsecondary-level vocational education program areas. A summary of the number of studies that reported percentage of unemployment is presented in Table 11. Of the 74 separate percentages reported, 57 are below 10 percent and 69 are below 20 percent. Major differences in the patterns of unemployment were not found by program area. (A more detailed table with percentages reported for each study is included in Appendix 5.)

Three other *more rigorous studies* conducted at the postsecondary local level were identified that were not included in the table. Two of these studies (Von Stroh, 1968 and Davison, 1968) reported employment and unemployment rates for total samples rather than by specialty areas. The third study (Ballo, 1971) compared graduates and nongraduates.

Von Stroh surveyed Oklahoma State Tech summer 1966 graduates six months after their graduation. With 64 percent of the graduates responding, 74 percent said they were employed full-time while 7 percent identified themselves as unemployed.

Similarly, in a 1968 survey, Davison studied persons who graduated from four New York Community Colleges in 1965. The response rate for the study was 43 percent. Across all program areas, 81 percent of the respondents were employed, and only 1.5 percent were unemployed. Taken together, the Von Stroh and Davison studies presented employment and unemployment rates comparable to those reported in Table 10.

Ballo (1978) surveyed graduates and nongraduates of vocational programs from the Lewis and Clark Normal School in Lewiston, Idaho. Survey participants had been out of school anywhere from less than a year to four years at the time of the survey. In addition, 74 percent of the ex-students responded to the survey. For the graduates, 75 percent were working full-time while 5.5 percent were unemployed. Among nongraduates, 60 percent were working full-time, and 5 percent were unemployed. Thus, more nongraduates were involved in other pursuits such as military service, continuing their education, or working in the home.

A similar pattern was found for the results of fifteen *less rigorous studies* which are also summarized in Table 11. Thirty-four separate percentages were reported; 27 of these were below 10 percent and 31 were below 20 percent. Again, no differences in the pattern of unemployment were evident across vocational education program areas.

The results for the *less rigorous studies* reported above are based on the findings of Iowa (1977); Ohio (1979); Wood (1969); Cummins et al., 1972); South Dakota (1970); Licata (1977); Norgaard (1975); Franken et al. (1976); Morton et al. (1977); Roesler (1971); Fawley (1977); Elson (1972); Hess (1975); Dunbar (1973); and Weiss (1971).

A national study of graduates of 103 technical and community colleges yielded an even lower rate of 2.5 percent unemployment (Gartland and Carmody, 1970).

B. Occupation related to training. Two issues concerning employment related to training are discussed below. First, studies that examined the relation between the graduates' present jobs and their training are discussed. The current job information was used since it was collected in all of the studies, while information on other jobs in the participants' postgraduation work history

TABLE 11

FREQUENCY OF STUDIES REPORTING PERCENT OF POSTSECONDARY GRADUATES' UNEMPLOYMENT

Program Area	Percent Unemployed							
	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36+
	Number of Studies							
More Rigorous Studies								
Agriculture	5	0	0	0	1	0	0	0
Distributive Education	5	0	0	1	0	0	0	0
Home Economics	0	2	0	2	1	0	0	1
Health	9	4	2	0	0	0	0	0
Business and Office	2	8	1	2	1	0	0	0
Technical	10	4	1	0	0	0	0	0
Trades and Industry	4	4	2	1	1	0	0	0
Less Rigorous Studies								
Agriculture	2	1	1	0	0	0	0	0
Distributive Education	2	0	0	0	0	0	0	0
Home Economics	1	1	0	0	0	0	0	0
Health	4	0	0	0	0	0	0	0
Business and Office	3	0	0	0	0	0	0	0
Technical	2	0	0	1	0	0	0	0
Trades and Industry	2	1	0	0	0	0	0	0
Vocational Education	3	2	1	0	0	1	0	0
Other	1	1	1	0	0	0	1	0

was not always included. Second, studies that examined the reason for accepting employment outside the training area are discussed.

Two *more rigorous studies* compared public vocational graduates with other groups. Wilms (1974) compared placement rates for persons who had been trained for two different levels of occupations—the professional and technical level and lower levels. He found that eight of every ten graduates of professional and technical level programs did not get the jobs they trained for. In contrast, eight of every ten graduates from lower level programs got the jobs they had trained for, but with the exception of secretaries, barely earned the federal minimum wage.

One other *more rigorous study* by Shymoniak (1972) examined employment rates for the following groups:

	Percentage in Training-Related Job	
Groups	**First Year After Graduation**	**Second Year After Graduation**
25 general education graduates	39	55
39 office education graduates	96	93
14 health education graduates	93	86
30 trade and industry graduates	87	77
7 agricultural education graduates	57	50

Altogether, the postsecondary studies with vocational education subgroup comparisons suggested that the program areas did not seem to differ greatly among each other on this outcome variable. In addition, some information suggested that graduates and nongraduates enjoyed similar unemployment rates but different employment rates with more graduates pursuing full-time employment and more nongraduates involved in "other" activities.

In a *less rigorous study*, Allen and Gutteridge (1978) found that 80 percent of proprietary school graduates and 75 percent of community college graduates obtained jobs in training-related areas. Shymoniak's results suggest that a higher percentage of postsecondary vocational than nonvocational graduates obtain training-related jobs. Allen and Gutteridge's results suggest that no difference exists between proprietary and community college graduates.

Sixteen *more rigorous studies* reported percentages of graduates employed in training-related jobs by vocational program area. The summary of the frequency of studies reporting such percentages is presented in Table 12. Sixty-two separate percentages are reported; 92 percent are over 50 percent and 79 percent are over 70 percent. A more detailed table of percentages by study is included in Appendix 5. No differences by program areas are notable.

Even higher percentages of training-related employment were reported in the eighteen less rigorous studies. The summary of these studies (see Table 12) reveals that all thirty-two of the separate percentages were above 50 percent, and 84 percent of them were above 70 percent.

The *less rigorous studies* that formed the basis for table 12 included Cummins et al., 1972; Langley, 1976; Morton, 1977; Queen et al., 1978; Nordgard, 1975; Iowa, 1977; Perelles, 1975; Allen et al., 1978; Wood, 1969; Becker et al., 1968; Weiss, 1971; Ohio, 1979; Gammel et al., 1976; Franken et al., 1976; Anthony, 1971; Huber et al., 1971; Licata, 1977; Smiley, 1976; and Kanzik, no date.

TABLE 12

FREQUENCY OF STUDIES REPORTING PERCENTAGE OF POSTSECONDARY GRADUATES IN TRAINING-RELATED EMPLOYMENT

Program Area	Percentage in Training-Related Employment						
	0-40	41-50	51-60	61-70	71-80	81-90	91-100
	Number of Studies						
More Rigorous Studies							
Agriculture	1	1	0	1	0	2	0
Distributive Education	0	0	0	1	1	1	3
Home Economics	0	0	0	1	0	1	0
Health	0	0	0	0	2	3	9
Business and Office	0	0	0	1	2	7	2
Technical	0	0	1	1	2	7	2
Trades and Industry	0	0	1	1	1	7	0
Subtotals	1	1	2	6	8	28	16
Less Rigorous Studies							
Agriculture	0	0	1	0	0	2	3
Distributive Education	0	0	0	0	0	0	2
Home Economics	0	0	0	0	1	2	0
Health	0	0	0	0	1	0	3
Business and Office	0	0	0	0	1	0	2
Technical	0	0	0	0	0	1	2
Trades and Industry	0	0	1	0	0	2	0
Special Programs	0	0	0	0	0	0	0
Vocational Education	0	0	1	2	0	2	3
Subtotals	0	0	3	2	3	9	15

In a *national study*, Noeth and Hanson (1976) followed up on the American College Testing Program's Career Planning sample. They found that 74 percent of the respondents were employed in occupations related to their training.

Reasons for Accepting Employment Outside of Training Area

Another aspect of "occupation related to training" is the reason a person would choose to accept employment in an unrelated field. Two studies at the postsecondary level asked participants who were employed in occupations not related to their training to report the reason they took a job in an area unrelated to training. Table 13 presents a summary of the reasons for working in an unrelated area and the percentage of respondents choosing each reason by generic program area. Unfortunately, none of the studies used similar lists of reasons on their questionnaires. Thus, the authors had to use their judgment when combining the findings of the studies into the table. A more comprehensive table, listing reason by study, is presented in Appendix 5.

The five most common reasons were (from most to least popular): training insufficient, no job available in training area, better opportunity or pay in another field, preferred to work in another field, and other. From these results it was apparent that secondary and postsecondary vocational education graduates not employed in areas related to training differ somewhat regarding the reason for the unrelated employment. However, since the questionnaires in the studies presented different lists of reasons, such comparisons are hazardous.

Examination of Table 13 reveals that the persons in the generic program areas differed among themselves regarding reasons for unrelated employment. The most common reasons for each program area were: health—a tie between insufficient training and better opportunity or pay in another field; business—no job available in training area; technical—a three way tie among training insufficient, better job opportunities and pay in another field, preferred to work in another field; public service—no job available in training area; and communications—a tie between no job available in training area and training insufficient.

C. Earnings. First, studies that employed vocational and nonvocational comparison groups are discussed. This is followed by a discussion of studies that examined differences for vocational education subgroups. In the literature search, three more rigorous studies dealing with comparisons between vocational and non-vocational curricula on the outcome of earnings were of sufficient quality to merit attention. These articles are reviewed below.

Robon (1977) compared the earnings of business graduates from secondary, two-year college, and four-year college programs. Robon found that the salaries of graduates increased with each subsequent level of education. However, since the groups were not equally equated on sex of participants (all of the high school graduates, 86 percent of the two-year college graduates, and only 10 percent of the four-year college graduates were females) these results cannot be directly attributed to educational level.

In addition to wage comparisons between two-year and four-year college graduates, one study focused on comparisons between postsecondary vocational education graduates and secondary (not necessarily vocational education) graduates. In a study using matched pairs of postsecondary vocational graduates and secondary graduates, Schriver and Bowlby (1971) reported that the postsecondary vocational graduates earned $1.57 per week more than the secondary graduates. This differential increased to $7.02 per week if the participants reported training beyond their initial group level.

TABLE 13

SUMMARY TABLE OF POSTSECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT TO AREAS NOT RELATED TO TRAINING

	Health	Business Office	Tech	Personal P.S.	Communication
No job available in training area	7%	23%	20%	22%	32%
Learned new skill in military service or school	7%	3%	3%	5%	8%
Training insufficient	27%	22%	23%	20%	32%
Better job opportunity or pay in another field	27%	19%	23%	16%	12%
Preferred to work in another field	14%	22%	23%	16%	12%
Other	18%	10%	9%	20%	4%

One study located in the literature review compared the earnings of vocational and general education community college graduates. Shymoniak (1972) surveyed graduates of 1969 from three community colleges in California. The vocational graduates were drawn from the office, health, trades and industry, technical, and agriculture programs. In the analyses, trades and industry graduates were combined with the technical graduates. The results indicated that office and trades and industry graduates grossed significantly more per hour than the general education students in the first and second year after graduation. However, the remaining vocational program area graduates did not differ from the general education student in earnings. Unfortunately, the small sample size for each vocational program area severely limit the generalizability of Shymoniak's results, but the results suggest that vocational program areas can heavily influence wage comparisons between vocational and nonvocational graduates.

Two *less rigorous studies* were located that compared the earnings for vocational and nonvocational graduates. Weiss (1971) reported that postsecondary vocational graduates of apparel arts and tailoring programs earn less than baccalaureate degree graduates from programs on fashion merchandising and apparel, textiles, and design.

In a study using matched pairs of male postsecondary vocational graduates and secondary graduates, Anthony (1971) reported no wage difference between the groups in wages on first job after graduation, and on the current job. Also, the two groups did not differ in the rate of earnings increase.

Six *more rigorous studies* presented earnings information in a manner that allowed for a gross comparison across generic program areas (Goodman, 1975; Division of Postsecondary Education, New Hampshire State Department of Education, 1975; Baratta, 1978; Parker, Whelan, Gonzales, Trujillo, and English, 1979; Quanty, 1976; and Wisconsin Board of Educational, Technical and Adult Education, 1979). In this comparison, the technical program area was associated with the highest earnings in five of the six studies. Less consensus was found regarding the area associated with the lowest wages. The business area was associated with the lowest earnings in two studies, with the program areas of health, distributive, trades and industry, and home economics being identified once each as the lowest paying area. However, statistical tests were not performed in the above comparisons so the results should not be interpreted to apply to the population as a whole. They are merely suggestive. The fact that the subprograms within each generic area were different across studies would prevent any meaningful statistical analysis.

In another *more rigorous study*, Wilms (1974) compared the earnings of proprietary and public postsecondary graduates in the areas of accounting, computer programming and electronic technicians. He found no significant differences in the public and proprietary accounting graduates' earnings, although the average proprietary graduate earned a little more at first. There was no significant difference in the public and proprietary programming graduates' earnings, although the public graduates got higher level jobs significantly more often. Graduates of public electronic technician programs earned significantly more at first; however, proprietary graduates closed the gap over time. Overall, he found no significant difference in earnings for public and proprietary graduates.

As was the case with the secondary level studies dealing with earnings, two *more rigorous* postsecondary *studies* indicated that males out-earned females (Eyler, Kelly, and Snyder, 1974; and Von Stroh, 1968). In addition, these two studies also found that white graduates earned more than minority graduates.

Three *more rigorous studies* addressed wage comparisons between postsecondary graduates and dropouts. Two of the studies (Ballo, 1971 and the Wisconsin Board of Vocational, Technical, and Adult Education, 1979) reported that graduates and nongraduates did not differ in earnings, at least within the first year after graduation. In contrast, Eyler, Kelly, and Snyder (1974) found that nongraduates received higher initial and current salaries than did graduates. However, Eyler et al. related that the nongraduates tended to be older than the graduates, and thus probably had more prior work experience that qualified them for higher wages.

Eighteen *less rigorous studies* were located that addressed the earnings variable. Of these eighteen, eleven reported their data in terms of ranges, thus making conversion to a common base and meaningful interpretation impossible (Fawley, 1977; Elson, 1972; Teague, 1976; Langley, 1976; Michaels, 1976; Nordgaard, 1975; Perelle, 1975; Brown, 1976; Roesler, 1971; Seamens et al., 1972; Huber, 1971).

Three of the other studies reported data only for agricultural graduates (Wood, 1969; Cummins et al., 1972; Becker et al., 1969). The respective weekly earnings for these three studies converted (by the authors of the present report) to 1979 dollars were $246.80, $218.21, and $210.10. Dunbar (1973) reported the average salary for commercial floriculture technicians as $230.56 (also converted to 1979 dollars).

Gillie et al. (1973) examined earnings of vocational graduates in Pennsylvania from 1955 to 1971. The data do not fluctuate a great deal from 1955 to 1969 (when the dollars are converted to a 1979 standard). In 1970 and 1971, a sharp drop is evident from $1,047.42 in 1969 to $844.92 in 1970, and $686.45 in 1971. The authors reported a decrease in satisfaction with earnings over the years.

Two studies provided a comparison of vocational education program areas. These are reported below.

	Ohio 1979		**Iowa 1979**
	Male	**Female**	
Vocational education	218.00	196.69	199.30
Agriculture	196.69	172.72	220.68
Distributive education	216.67	194.92	187.63
Health	241.09	208.68	189.24
Home Economics	202.91	163.84	139.84
Business	215.34	171.38	169.08
Trade and Industry	216.23	204.24	213.56
Technical	240.20	214.56	255.86

The highest paying salary was for technical graduates; the lowest was for home economics. Both studies reported earnings only for those employed in their training area, and the Iowa study specified that the home economics data was limited to those who had graduated from the home economics program for gainful employment.

No *national studies* were located that addressed earnings at the postsecondary level.

D. Employee satisfaction. The measure of employee job satisfaction has been the focus of a number of follow-up surveys of graduates from vocational-technical schools. Efforts to collect data on this variable have used a variety of approaches including questions concerned with: (1) assessing the satisfaction of graduates with their first postgraduation job, last job, and present job; (2) determining the present attitudes/feelings of graduates toward their job and work; (3) determining whether employed graduates would select the same job again; and (4) determining if employed graduates would recommend their job to a friend. The great majority of the follow-up studies have focused on determining the overall satisfaction of graduates, although a few have focused on determining the employees' satisfaction with specific aspects of their job such as satisfaction with pay, benefits, working conditions, coworkers, the company or employer, and the nature of the job itself.

For the purpose of this review, four *more rigorous studies* were identified on employee job satisfaction criteria (see Table 14). The following are specific characteristics of these four studies.

- Two were local in scope, one was statewide, and one was regional in nature.
- One employed posttest measures only to compare vocational and nonvocational groups; two compared graduates and dropouts of vocational programs; and one compared vocational and proprietary school graduates.
- The studies were conducted by mail and telephone surveys of employed vocational and nonvocational graduates.

Analyses and interpretations of the findings of these studies, while not totally conclusive, indicate that graduates from vocational programs are as satisfied as or are significantly more satisfied with their present jobs (Conroy and Diamond, 1976) than graduates from other programs or the regular academic curriculum.

Graduates of public vocational training appear to be more significantly satisfied with their job than graduates from proprietary vocational training programs (Wilms, 1974). In a study of public and proprietary vocational graduates of four large metropolitan areas in the United States, Wilms found that public accounting, programming, and dental assistant graduates were significantly more satisfied with their job when compared to their proprietary counterparts. Wilms also reported that ethnic minorities tended to be less satisfied than their white counterparts.

There do not appear to be significant differences between graduates and nongraduates of vocational programs in relation to job satisfaction on the first full-time job upon leaving vocational school (Ballo, 1971). Von Stroh (1968) found that the majority of the graduates reported being satisfied with their jobs.

In general, the results of these studies tend to agree with each other and the results of other studies on measures of employee satisfaction. The generality of the results of these studies suggests that with respect to the graduates' overall evaluation of their satisfaction with their jobs, the satisfaction of vocational graduates is comparable to or greater than that of graduates from other curricula.

Three *less rigorous studies* reported data for individual vocational education program areas. Barsaleau et al. (1977) found that a majority of animal health technicians were satisfied with their jobs (79 percent). Teague (1976) reported that a majority of business coop graduates were satisfied with their jobs (68 percent). Seamens et al. (1972) examined job satisfaction for diploma and associate degree graduates in automotive mechanics. Sixty-two percent of the diploma graduates reported being "very pleased" or "fairly satisfied"; 30 percent reported being "satisfied, *but plan to change jobs.*" The corresponding figures for associate degree graduates are 69 and 29 percent, respectively.

Brown (1976) compared job satisfaction for coop and non-coop graduates. He found that a majority of both groups were fully or partially satisfied with their jobs (85 percent of each group).

Gillie et al. (1973) compared satisfaction with pay and opportunity for advancement for graduates between 1955 and 1971. They reported that satisfaction for both aspects was decreased over the years; however, it was still between "neutral" and "moderately satisfied."

Noeth and Hanson (1976) used the American College Testing's Career Planning Program to examine differences in job satisfaction among program areas. Their results were as follows:

	Percentage very/fairly satisfied
Business and marketing	93
Registered nursing	98
Accounting	94
Electrical engineering technology	92
Science	97
Auto mechanics	94
Social sciences	95
Arts and humanities	85

E. Employer satisfaction. Table 15 presents information concerning two *more rigorous studies* focusing on employer satisfaction with vocational and nonvocational graduates that were considered to meet minimal levels of methodological acceptability. An analysis of the studies reveals the following information:

- Both are state studies.
- One of the studies employed a nonvocational comparison group.
- The studies focused on graduates of technical schools, community and junior colleges, and area vocational schools.
- The studies utilized employer ratings on a variety of measures including job performance, entry-level skills, technical knowledge, preparation for job, and specific aspects of the job.
- The one comparative study indicated favorable ratings on the part of employers toward the entry-level skills, technical knowledge, and job performance of vocational graduates.

A study of 1977 secondary and postsecondary vocational program graduates from Iowa was conducted by the Iowa Department of Public Instruction (Report to the Iowa Department of Public Instruction, 1977). Employers were surveyed using a mail questionnaire concerned with determining the preparation and performance of vocational graduates on the job. Data collected on the graduates revealed that (1) vocationally trained employees were considered "better prepared" by their employers than nonvocationally trained employees on job skills, technical knowledge, basic reading, and verbal skills; (2) vocationally trained employees were performing at or above expected performance by 77.8 percent of the responses given; (3) secondary

TABLE 14

EMPLOYEE SATISFACTION FOR VOCATIONAL AND NONVOCATIONAL POSTSECONDARY GRADUATES

Investigator/Year	Findings
Conroy and Diamond, 1976	1. Students in all programs *are* largely satisfied with their jobs. 2. All occupational students are significantly more satisfied with their job than nonoccupational students.
Ballo, 1971	1. 92 percent of the graduates and 93 percent of nongraduates working in the area of their training reported they were satisfied with their occupation. 2. 69 percent of the graduates and 80 percent of the nongraduates indicated they liked their present job. 3. There were no significant differences between graduates in relation to job satisfaction on first full-time job upon leaving vocational school.
Von Stroh, 1968	1. 69 percent of the graduates reported they were satisfied with their present job.
Wilms, 1974	1. Proprietary graduates were significantly less satisfied overall than public graduates. 2. Public accounting, dental assistant, and programming graduates were significantly more satisfied than proprietary graduates.

TABLE 15

EMPLOYER SATISFACTION WITH VOCATIONAL AND NONVOCATIONAL GRADUATES FOR POSTSECONDARY LEVEL

Investigator/Year	Findings
Report to the Iowa Department of Public Instruction, 1977	1. Employees were rated good to very good on job skills and technical knowledge. 2. Employers were satisfied with employees' quality and quantity of work, attendance, punctuality, and compliance.
Hodges, 1973	1. Former agricultural mechanic students were rated above other entry-level workers. 2. Former students were rated in middle 50% when compared to entry-level workers.

graduates had higher percentages on better prepared for job skills, technical knowledge, and basic reading and verbal skills than postsecondary graduates; and (4) secondary vocational graduates had higher overall performance ratings compared to postsecondary vocational program graduates.

Hodges (1973) found that graduates of an agricultural mechanics program were rated above other entry-level workers. The vocational graduates were rated above average in such categories as power mechanic skills, machinery and construction skills, personnel relations skills, and supervisory or management skills.

When Parker et al. (1979) broke out the results of employer satisfaction ratings by vocational education subspecialty areas, they found that graduates from all of the areas received average or above average ratings.

Four *less rigorous studies* addressed employer satisfaction with agricultural graduates. Dunbar (1973) found that 96 percent of the employers expressed satisfaction with commercial floriculture graduates. Elson (1972) found that the landscape and nursery technicians were rated above average to superior. Becker and Bender (1969) found that 92 percent of the agricultural graduates were rated average or above. Cummins et al., 1972 found that agricultural graduates were rated above average on such traits as integrity, responsibility, dependability, and courtesy and friendliness.

Three less rigorous studies addressed employer satisfaction in the health area. Sixty-six percent of hospital personnel stated that associate degree nursing graduates compare favorably with graduates of four-year programs (Michaels, 1976). Employers of medical assistants rated them adequate or above (Licata, 1977). The majority of employers rated allied health graduates as "good", "very good" or "excellent" on such factors as technical competency, technical knowledge, theoretical knowledge, and manipulative skills (Perelle, 1975).

Three other *less rigorous studies* examined employer satisfaction with vocational education graduates generally. Fawley (1977) reported that 97 percent of the employers were satisfied with the performance of vocational/technical graduates who were hired. In another study, graduates were rated above average on such traits as "relation with others," "judgment," "ability to learn," and "dependability" (San Mateo, no date). Kanzik's study (no date) yielded similar results as those reported above.

No *national studies* were located that addressed employers' satisfaction.

II. Education and Training

This section contains a discussion of research concerning the educational experiences of postsecondary level students. The variables include academic achievement, occupational skill acquisition, attendance/ dropout, continuing education, and satisfaction with training. Unlike secondary level research, no studies were located that addressed basic skill acquisition.

A. Academic achievement. Two *more rigorous studies* were found that addressed academic achievement. Von Stroh (1968) investigated the grade point averages of graduates and dropouts from a vocational postsecondary institution in Oklahoma. Overall, he found the graduates had a grade point average of 2.79 in shop subjects and a 2.69 grade point average in related subjects. Dropouts had a 2.17 shop grade point average and a 1.75 grade point average in related subjects. The overall grade point averages by sex were 2.74 for male graduates and 2.84 for female graduates, and 2.11 for male dropouts and 2.21 for female dropouts. Racial differences reported for overall grade point averages were 2.73 for Native American graduates, 2.28 for Negro graduates, 2.81 for white graduates, while the averages were 2.02 for Native American dropouts, 1.92 for Negro dropouts and 2.14 for white dropouts. Rural/urban differences were reported as 2.82 for rural graduates, 2.72 for urban graduates, and 2.11 for rural dropouts, 2.13 for urban dropouts. Thus females, whites, and rural graduates tended to have the highest grade point averages. Dropouts consistently showed lower grade point averages than graduates.

Ballo (1971) also reported on the grade point averages of graduates and dropouts of vocational postsecondary schools. He sampled students who had attended an Idaho normal school between 1966 and 1970. He found no significant difference between the grade point average of graduates and nongraduates while they were attending vocational school. Graduates as a group had higher grades than nongraduates (averages of 2.81 and 2.25, respectively). While Von Stroh did not present a test of significance on his data, the direction appears to be similar to that of Ballo.

No *less rigorous* or *national studies* were located which addressed academic achievement.

B. Occupational skill attainment. One *more rigorous study* assessed the attainment of specific occupational skills at the postsecondary level. Weiss (1974) conducted an evaluative study on the use of a demonstration program for postsecondary hospitality education. The first phase of the study involved evaluating the attainment of specific occupational skills of graduates from three programs: seventeen students in a demonstration program, forty-one students in a two-year associate degree program at a junior college, and thirty-nine students in an associate degree program at a large university. The students were given the Food Production and Service Achievement Test prior to graduation. The students in the demonstration program scored significantly lower on the achievement test than graduates from the other programs.

When the achievement scores of the graduates were compared to the achievement scores of students entering their second year of the program, no significant difference was found. Although the findings seem to indicate that the demonstration program is not effective in producing qualified midmanagement personnel for the hospitality industry, Weiss states that the program is seen as neither a dismal failure nor an overwhelming success. She concludes that it should be viewed as an emerging possible alternative to traditional laboratory oriented programs in hospitality education.

Most studies that compared the level of achievement of specific occupational skills attained by students from different programs were unable to attribute these differences to the type of curriculum or programs offered. This is due to the fact that there are many other variables which may cause these differences. Weiss (1974) attempted to deal with two of these variables: academic ability and motivation. In most studies, it is possible to conclude that differences in the attainment of occupational skills of students from different programs could be due to the fact that the programs may attract students of different academic ability and motivational levels. In order to account for differing academic ability, Weiss compared the grade point averages and class ranking of the students from the different programs and found no significant differences. She also examined the level of vocational commitment by administering the Vocational Commitment Index and found no differences among the subjects from the different programs. By accounting for these variables, she was able to lend support to her conclusion that differences in the level of occupational skills were due to the type of program the student was enrolled in. A major criticism of the report would be a lack of an adequate definition of the demonstration and the traditional associate degree programs.

In a *less rigorous study* of allied health graduates, Perelle (1975) found that 57 percent passed the licensing examination on the first try, an additional 37 percent passed by the third try, and only 3 percent never passed.

No *national studies* were found that addressed occupational skill attainment.

C. Attendance/dropout. No *more rigorous studies* were located that addressed attendance/dropout. Several *less rigorous studies* reported dropout statistics for postsecondary education.

Hand (1974) found that out of 256 postsecondary vocational students surveyed, 25 percent had dropped out. The most common reasons given were "learned necessary skills" (20 percent), "accepted a job (13 percent), "lack of money" (3 percent), and "program not appropriate to needs."

Iverson and Brown (1979) reported that of 729 community college students surveyed, 25 percent said they were leaving school with the intention of returning at a later date.

Elson (1972) found that 42 percent of the 162 students enrolled in landscape and nursery technology at Michigan State University dropped out of the program.

Horvath (1973) analyzed dropouts who had been enrolled in college prep and vocational high school programs. At the time they left the program, there was no significant difference between the two dropout groups in regard to their education standing, i.e., good standing or probation, although more vocational students had been suspended. Thirty-four percent of the vocational students graduated, contrasted with 42 percent of the college preparatory group.

In a *national study* using *Class of 1972* data, Peng et al. (1977) concluded that students in vocational and general programs are more likely to withdraw from postsecondary institutions than students from academic programs. The author treats general and vocational students as one group and no conclusions based solely on vocational students can be made.

D. Continuing education. Several *more rigorous studies* (see Table 16) have looked at continuing education at the postsecondary level (Larkin, 1977; Davison, 1968; Carter, 1975; Clark, 1975). Almost all of the studies reported whether graduates of vocational programs at community colleges go on to a four-year, bachelor's degree-granting college or university. None of the studies compared vocational or nonvocational students, nor were any data provided for agricultural or home economics graduates. A larger percentage of trade and industry graduates tended to continue their education than did students from other program areas. The results of the studies showed so much variability in the percentage by program area that it is difficult to draw conclusions.

A summary of the *less rigorous studies* is presented in Table 17. The results of these studies suggest that a very low percentage of postsecondary vocational graduates continue their education for more than two years (Becker et al., 1969; Cummins et al., 1972; Ohio, 1979; Iowa, 1977; Perelle, 1975; Franken et al., 1976; Nordgaard, 1975; Wood, 1969; Michaels, 1976; Elson, 1972; Pachucki, 1969; Kanzik, no date; Brown, 1976; Queen et al., 1978; and Preston, 1976). The percentage continuing their education was generally below 20 percent, with less than 10 percent being most frequently reported.

E. Satisfaction with training. The more rigorous studies that address the outcome variable "student satisfaction with training" report that the majority of the graduates are satisfied with their training (Roberts, 1974; Van Bremer, 1979; Von Stroh, 1968; Robon, 1977; Larkin, 1977;

TABLE 16

PERCENTAGE OF GRADUATES WHO PURSUED MORE THAN TWO YEARS OF POSTSECONDARY EDUCATION

		Sample Size/Percentage*				
Author		**Vocational Education**	**Bus.**	**Dist.**	**Health**	**Trade and Industry**
More Rigorous Studies						
Carter,	n	141	62	24	–	55
1975	%	28	24	38	–	25
Clark,	n	238	86	14	1	126
1975	%	16	13	7	6	20
Davison,	n	432	146	74	93	71
1968	%	54	59	62	44	53
Larkin,	n	382	81	–	197	104
1977	%	21	28	–	9	38

* No data were presented for nonvocational, agricultural, or home economics graduates at the postsecondary level.

TABLE 17

FREQUENCY OF LESS RIGOROUS STUDIES REPORTING PERCENTAGE OF POSTSECONDARY GRADUATES WHO CONTINUE THEIR EDUCATION BEYOND TWO YEARS

	Percentage			
Program Area	**1-10**	**11-20**	**21-30**	**31-40**
Agriculture	4	1	0	0
Distributive education	2	0	0	0
Business and office	2	0	0	0
Health	3	1	0	0
Home economics	1	1	0	0
Trades and industry	1	1	0	0
Landscaping	0	1	0	0
Technical	1	2	0	0
Vocational education	3	1	2	1

Carter, 1975; Clark, 1975; DeVaney, 1974; Preston, 1976; Quanty, 1976; Gammel, Brodsky and Alfred, 1976; Baratta, 1978; Hall, Gray, and Berry, 1975; Hamby et al., 1978; Swanson, 1976). These studies examine satisfaction with training in an unsophisticated manner. The exception is Hall, Gray, and Berry (1975) who asked their subjects to evalute their education by the quality of curriculum and teaching, choice of training program, comparison of school and industrial equipment, instructor's interest in student's progress, help in securing first job, and timeliness of instruction. The data from this survey help explain why the students were satisfied. This study suggests ways in which researchers can improve the quality of the data as well as learning the answer to the question "Why were the graduates satisfied with their training?"

Proprietary graduates were generally less satisfied with their training than their public counterparts, however, there was no significant difference between the two groups concerning the adequacy of their training (Wilms, 1974).

All nine of the *less rigorous studies* reported that a majority of the vocational graduates were satisfied with their training (Licata, 1977; Stander, 1973; San Mateo, no date; Morton et al., 1977; Brown, 1976; Anthony, 1974; Nordgaard, 1975; Michaels, 1976; and Dunbar, 1973).

No *national studies* were located that addressed satisfaction with training at the postsecondary level.

III. Ancillary Effects

This section reports the information that is available concerning postsecondary graduates' aspirations, attitudes and values, and citizenship.

A. Aspirations. In a *more rigorous study*, Von Stroh (1968) studied the occupational interests and goals of postsecondary vocational graduates while they were in school and six months later. The pregraduation survey asked them to respond to a list of reasons for choosing their training field (occupational interests). If they changed jobs, they were asked after graduation to list reasons why they did so (occupational goals). The following were the most frequently chosen responses for occupational interests: interest (88 percent), high pay (56 percent), working conditions (39 percent), and aptitude (36 percent). Six months later, the most frequent responses for occupational goals were the following: better opportunities (42 percent), higher salary (29 percent), more challenging work (10 percent), and more desirable geographic location (8 percent). The pre- and post-graduation survey results are not comparable because different items and scoring metrics were used for the two surveys. Each item required a "yes" or "no" response for occupational interests; for occupational goals, the students supplied their own reasons.

B. Attitudes and Values. In a *less rigorous study*, Brightman (1973) investigated students' changes in attitudes toward college in general and toward the particular course in which they were enrolled. The comparison groups were students enrolled in an introductory psychology class. The researchers found that the cooperative education students showed a more positive attitude toward education and their course than the control group. The magnitude of the differences were not great for attitudes toward education and not meaningful for attitudes toward the specific course.

C. Citizenship. Two *less rigorous studies* examined the citizenship behavior of postsecondary graduates. The Ohio Department of Education (1979) reported on its 1978 vocational program completers by specialty area who said they had voted in the six months since they completed their job training program.

The overall average for postsecondary graduates was only 9 percent (compared to the secondary average of 22 percent). The average for postsecondary students was reduced by only 3 percent of the technical education, 7 percent of the trade and industrial, and 8 percent of the home economics graduates who reported voting behavior. Distributive education graduates reported voting behaviors more frequently than any other group (29 percent).

Elson (1972) explored the civic activities of graduates and dropouts from a landscape and nursery technician program. Elson asked the subjects to respond to a list of civic clubs by indicating whether or not they belonged to a club and, if so, whether they were officers. Vocational graduates indicated that they belonged to civic clubs and were officers in such clubs with greater frequency than dropouts.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Questions concerning the effects produced by participating in vocational education have been asked with increasing frequency since the nation reaffirmed its commitment to publicly supported programs with the passage of the Vocational Education Act of 1963. The original federal support for programs at the secondary level, the Smith-Hughes Act of 1917, had two main purposes: to provide a more meaningful education for those young people who did not plan to continue their education after high school, and to meet the needs of the labor force for particular skills. The 1963 Act, and its subsequent amendments, added a broader set of social goals such as serving disadvantaged and handicapped individuals and eliminating sex stereotyping in occupations.

As additional objectives and resources have been assigned to vocational education, additional requests have been made for evidence that vocational programs are achieving these objectives. Many of these questions have been raised by critics of vocational education who contend that the vocational curriculum limits rather than increases the opportunities available to its students. Vocational education does so, these critics allege, by directing, or "tracking," disadvantaged and lower class youngsters into programs that prepare them for low paying jobs.

Proponents and critics of vocational education have been able to develop arguments and assemble evidence for both points of view. Considerable uncertainty exists over just what effects can reasonably be attributed to participation in vocational education.

This uncertainty is not due primarily to any unique features of vocational programs. Estimating the long-range effects of any education experience is probably the most difficult problem in all of educational research. When the outcomes of interest are subject to many influences over which the education program has little or no control, the difficulties are multiplied many times. Many of the major outcomes of interest in vocational education are just of this sort—employment, earnings, job satisfaction, occupational mobility. These outcomes are obviously influenced by factors that affect former students months and years after they leave their programs. Questions can be raised whether any educational experience can produce effects on these variables which are powerful enough to be detected with existing research methods. Nevertheless, vocational education has claimed that it can give its students a competitive advantage in the labor market and many analysts and decision-makers are asking what is the evidence for these claims. This report has attempted to provide some answers by assembling and summarizing all available research on effects reported from 1968 through 1979. The 1968 cutoff was set to assure that the studies that were included referred to fairly contemporary vocational education.

An extensive search was conducted to identify all relevant studies. This search yielded 1,489 unduplicated titles. After eliminating some titles and screening the remaining studies for relevance and actual data on effects, a total of 232 studies remained for use in this review.

These studies are summarized with regard to seventeen selected variables grouped into employment, educational, and ancillary effects. These variables were selected from a review of the objectives of vocational education, as reflected in federal legislation and from previous conceptual studies on evaluation that have been conducted at the National Center.

The primary purpose of this review was to summarize across the individual studies to determine if they yielded a consistent pattern of results that could reasonably be attributed to participation in vocational education. The purpose was not to test or further develop a conceptual model or to critique the individual studies.

The studies which were assembled varied widely on virtually every dimension. Differences in methodological quality were reflected in this summary by grouping the studies into more and less rigorous categories. The more rigorous studies were typically more carefully conducted with greater attention to definition of variables, more thorough and intensive collection of data, and more complete analysis of the data. The less rigorous studies were usually based on data collected for the follow-up reports on former vocational students which used to be submitted to the U.S. Office of Education and are now part of the Vocational Education Data System (VEDS) in the National Center for Education Statistics. Most of the studies included in this review were collected prior to VEDS and used a variety of methods and instruments to collect the follow-up data.

What is surprising, given the variability in the studies and in the programs they examined, is the similarity of the results they yielded with regard to employment and the relatedness of training to employment. This is not to say they all yielded similar results. The degree of clustering does, however, suggest that these studies are reflected results that are usually produced by vocational programs. The alternative explanation—that these studies are all reflecting systematic error—seems unlikely given their wide variability.

Thus despite the difficulty of the research problem to estimate long range effects—and—despite weaknesses in the separate studies, as a body these studies do reflect some effects that seem highly likely to have resulted from participation in vocational programs. The remainder of this chapter summarizes the results of this review for the selected variables by secondary and postsecondary studies. This summary is followed by a discussion of these results and of additional research that is needed.

Secondary Level Studies

I. Employment Effects Studies

Results are summarized below for the following variables: employment/unemployment, occupation related to training, earnings, employee satisfaction, and employer satisfaction.

A. Employment/Unemployment. Eleven of the *more rigorous studies* compared the employment experiences of vocational and nonvocational students. The results suggest that a higher percentage of vocational graduates are employed upon graduation from high school—however, the unemployment rates for the two groups are not significantly different.

An examination of seventeen of the *more rigorous studies* that reported differences among vocational education program areas revealed that unemployment rates tend to be fairly low. Of the eighty-nine unemployment percentages reported, forty-eight were below 10 percent, and seventy-seven were below 20 percent. The health and home economics areas consistently reported higher unemployment rates than the other areas. The high rates reported for home economics is probably an artifact of the failure to distinguish between home economics for homemakers and for gainful employment. Future research that takes this distinction into account will yield more meaningful data.

An additional twenty-one of the *less rigorous studies* were located. Of the forty-one unemployment percentages reported, thirty-one were below 10 percent, and thirty-seven were below 20 percent. These results are slightly more positive than those reported above for the more rigorous studies.

Some of the studies based on the national longitudinal data (Grasso and Shea, 1979; Parnes, 1970; Kohen, 1970; Center for Human Resources, no date) reported no labor market advantage for male vocational graduates; however, female vocational graduates did experience less unemployment than their general curriculum peers. Creech (1977) and Fetters (1975) reported positive labor market experiences for both sexes; however, Grasso and Shea (1979) criticized the Class of 1972 definition of variables and subject pool.

Eninger (1972) reported an overall unemployment rate of 23 percent for vocational graduates in the Project Metro study. He found the lowest rate for unemployment was for technical graduates.

B. Occupation related to training. A majority of secondary-level vocational students find employment that is related to the occupational area in which they were trained. In eighteen of the *more rigorous studies*, ninety-eight separate percentages were reported on occupations related to training. Of these ninety-eight percentages, seventy-two were over 50 percent; forty-eight were over 70 percent. The highest rates of related placement were associated with health and business and office graduates.

The most frequently cited reasons for accepting employment outside the training field were: "no job available in training area," "high school training insufficient," and "didn't like the job or work."

Thirty *less rigorous studies* were located which addressed the variable "occupation related to training." In these thirty studies, fifty-seven separate percentages representing individuals in occupations related to their training were reported. Of these fifty-seven percentages, forty-five were over 50 percent; twenty-eight were over 70 percent. Thus, the results of these other studies are similar to those of the rigorous studies discussed above.

National studies have also found that a majority of the vocational education graduates had jobs related to their training (Tabler, 1976; Eninger, 1972; National Center for Educational Statistics, 1975; Noeth and Hanson, 1976).

C. Earnings. Secondary level vocational education in some circumstances appears to confer an initial earnings advantage, but this advantage does not last more than a few years. The earnings variable is one which is particularly subject to a variety of influences beyond the effect of vocational education itself. One of the more careful studies, which attempted to control many of these influences (Hu et al., 1968), found an initial advantage, but a second (Herrnstadt et al., 1969) found no difference. Similarly, the less controlled studies found both advantages and no significant differences.

Thirteen *less rigorous studies* were located. Only five of these studies presented data in a manner that allowed for converting the dollars to a common base (the other eight studies' results were presented as ranges). The two studies which provided a basis for comparison between vocational and nonvocational students indicated a higher wage for vocational graduates. Comparisons among vocational education program areas, based on three studies, indicated that the highest wages were earned by trade and industry graduates, and the lowest by health and home economics graduates. The results of these studies confirmed the finding reported above that males out-earn females most of the time.

Using the NLS data, Grasso and Shea (1979) concluded that curriculum has little effect on earnings for male vocational graduates but female vocational graduates tend to out-earn their peers. Conroy (1979) examined earnings using the Class of 1972 and the Project Talent data. He found that vocational graduates out-earned nonvocational graduates. Eninger (1972) found that trades and industry graduates had the highest earnings, and that home economics graduates had the lowest earnings.

D. Employee satisfaction. Job satisfaction is one of the most frequently measured variables in follow-up studies and virtually all studies agree that former secondary level vocational students are satisfied with their jobs. The satisfaction of both vocational and nonvocational former students is usually found to be in the upper ranges of the measures that are used. This finding is also supported by the results of six *less rigorous studies*.

Job satisfaction, like the relatedness of employment and training, is a variable that is potentially subject to a self-justification bias. The respondents are usually in the jobs they are reporting on, and consequently may be reluctant to describe themselves as dissatisfied. Whatever bias this would introduce, however, should be equal for both vocational and nonvocational groups.

E. Employer Satisfaction. Employers are satisfied with the preparation of graduates of secondary vocational programs and in some cases more satisfied than with other comparable entry-level workers. This is supported by the results of ten of the *more rigorous studies* and twelve of the *less rigorous studies*. No *national studies* were located which addressed this variable.

It could be argued that if vocational education were really meeting the needs of employers a stronger preference would have been detected. This assumes, however, that the vocational and nonvocational former students are performing similar jobs, and evidence is rarely presented on the kinds of jobs that the employers are comparing. Often these studies simply ask the employers to make comparisons between vocational and nonvocational students in general. Sometimes follow-up information is collected about specific vocational and nonvocational students from their direct supervisors. Even in these studies, the nature of the jobs which the former students are performing is not reported. Without a control for job content, comparisons between vocational and nonvocational students have little meaning.

II. Education and Training

Results are summarized below for the following variables: basic skill attainment, academic abilities, occupational skill acquisition, attendance/dropout, continuing education, and satisfaction with training.

A. Basic skill attainment. Ludeman (1976) examined the mathematical abilities of vocational and nonvocational students. He concluded that vocational education students perform better in terms of practical application of mathematics skills and slightly below the overall mean in more advanced and theoretical mathematical concepts.

Four *less rigorous studies* were located. Custer (1973) found that coop students scored better on the Stanford Achievement Test's reading section than did non-coop students. Using the ACT, Horvath (1973) found that vocational students had higher vocabulary scores than nonvocational students, but showed no differences in mathematics and reading. A study of special populations (i.e., dropouts, potential dropouts, mental/functionally retarded, delinquents, and non-English speaking students) showed no gains on the Standford Achievement Test as a result of participating in a vocational program (*An Identification and Analysis of Effective Secondary Level Vocational Programs for the Disadvantaged, 1968*). Perkins (1973) found that vocational students scored higher on vocabulary items than a comparison group, but showed no difference for reading or mathematics.

The results of the studies on basic skill attainment are mixed, and weaknesses in the studies prevent drawing any meaningful conclusions at this time.

B. Academic achievement. In a well-conducted study by Market Opinion Research (1973), vocational students were found to come primarily from the second and third quartiles in terms of academic class standing. The upper quartile represented primarily college preparatory students, and the lower quartile represented primarily general students. Three of the *less rigorous* local and state *studies* found higher grade point averages for vocational than for nonvocational students, and one study found no differences. Caldwell (1971) found that participation in a special vocational program by students with grade point average below 2.0 had the effect of raising the grade point average significantly.

Results based on *Class of 1972* and National Longitudinal Surveys data suggest that there is essentially no difference between vocational and general students (Flemings et al., 1975; Creech, 1974; Fetters, 1975; Echternacht, 1975). These studies do reveal that academic students exhibit higher academic achievement than do vocational or general students.

C. Occupational skill attainment. Two *more rigorous studies* were located that addressed the attainment of occupational skills at the secondary level. Farrington (1974) found that students who graduated from specialized agricultural mechanics programs have a higher level of mastery in agricultural mechanics than either agricultural or nonvocational graduates from local schools. McQuay (1974) found that, when academic aptitude was controlled, the students who received two years of shop instruction had a higher level of shop achievement than the student completing only one year of their vocational program. These two studies suggest that students are acquiring the occupational skills relevant to their programs. However, this is a limited data base on which to draw conclusions.

Two *less rigorous studies* (Merrill, 1974; Horner et al., 1969) did not present data in a way that could allow meaningful conclusions to be drawn. Paulter (1975) found that 93 percent of graduates of licensed occupations passed the appropriate examination.

D. Attendance/Dropout. The research currently available is insufficient to answer the question "Does vocational education serve to retain students in school who might otherwise have dropped out?" However, Resta and Temple (1978) reported that blacks had the highest dropout rates, and that enrollees in nontraditional programs have a high dropout rate. Brantner and Enderlein (1972) found that dropouts scored higher on the values of prestige and security, and they hypothesized that dropouts leave school because they lack the maturity to seek the advantages of education and they look to the world of work to satisfy their needs. Custer (1973) and Herrnstadt et al. (1979) suggested that programs that include outside work experience provide additional motivation.

One *less rigorous study* supported the finding that coop students have a lower dropout rate than non-coop students (Stromsdorfer et al., 1973). Three studies of special disadvantaged populations suggest continued difficulties for these people. Inner-city students and highly disadvantaged students have a high dropout rate (*An Identification and Analysis of Effective Secondary Level Programs for the Disadvantaged, 1968*; Matthews 1976). Caldwell (1971) also found a low attendance rate for academically disadvantaged learners.

The national data presented mixed results. Nolfi et al. (1977) found that vocational education had the highest dropout rate when compared to the academic and general curricula. Grasso and Shea (1979) found that young women in vocational programs were more likely to graduate from high school than their general peers; their results were mixed for young men. Combs and Cooley (1968) found that dropouts from vocational and academic programs were more likely to leave in the first few years of high school and general curriculum students in the later years.

E. Continuing education. Of the eight *more rigorous studies* that compared the rate of continuing education for vocational and nonvocational groups, six found that nonvocational students continued their education at a higher rate than vocational students. Two studies did not show any difference; however, the definition used for "continuing education" in these studies may have contributed to this discrepancy. Vocational subgroups do not appear to differ among themselves in their rates for continuing their education.

As would be expected, a higher percentage of secondary nonvocational students continue their education than do vocational students. Nevertheless, the data also seem to indicate that approximately one-third of the vocational students do continue their education. While the evidence does not address the question as to the degree of preparedness to enter postsecondary education, it does suggest that for those inclined, the doors of postsecondary institutions are not closed to vocational graduates.

An additional thirteen *less rigorous studies* were located. The results of these studies indicate that the percentage of vocational students who continue their education beyond the secondary level generally ranges from 11 to 30 percent. This finding tends to substantiate the results for the rigorous studies presented above.

Data from the National Longitudinal Surveys and the Class of 1972 found results similar to those reported above (Grasso and Shea, 1979; Creech, 1977; Fetters, 1975, 1977; Eckland, 1976; Tabler, 1976). About one-third of the vocational graduates continued their education beyond the secondary level.

F. Satisfaction with training. Of the thirty-four (twenty-one *more rigorous*, ten *less rigorous*, and three *national*) studies that addressed this variable, all but one of them reported that the majority of the vocational students were satisfied with their training. The percentage of satisfied graduates was generally between 80 and 90 percent, supporting the hypothesis that vocational graduates perceive their training as being satisfactory. Additional research is required to determine which factors contribute to this appraisal.

III. Ancillary Effects

Results are summarized below for the following variables: aspirations, attitudes and values, feelings of success, and citizenship.

A. Aspirations. The aspirations for the majority of vocational education students appear to focus on skilled occupations which do not require a college degree (Ludeman, 1976). Approximately one-third of the vocational students did plan to attend college (Strickler, 1973).

The one *less rigorous* state-level *study* that addressed aspirations (Jacob et al., 1975) reported similar results. The percentage of vocational students planning to attend college was lower than in the rigorous study (22 versus 31 percent). The results of four *national* studies tend to support this trend, with fewer vocational than academic students planning to attend college. A much larger percentage of black than white academic and general students lowered their aspirations as they progressed through their high school programs.

B. Attitudes and values. The attitude of vocational graduates appears to be positive toward the value of their courses and course content (Market Opinion Research, 1973). While no significant differences were found in the occupational values when comparing vocational and nonvocational students (Strickler, 1973), differences were found for vocational graduates and dropouts. The graduates tended to score higher on satisfaction and salary values, and the dropouts scored higher on prestige and security (Brantner and Enderlein, 1972). This has implications for counseling and retraining potential dropouts. Kaufman et al. (1968) found the vocational students were more likely than other students to feel "looked down upon" in school.

The results of the three *less rigorous* and two *national studies* tend to confirm the feelings of satisfaction found in the more rigorous studies. They also addressed the feelings of adequacy of career awareness. The general trend appears to be that the majority of the students feel that are receiving adequate information, however, about one-fourth of the students perceived a deficiency in this area.

C. Feeling of success. No significant differences were found for feelings of success between vocational and nonvocational students (Market Opinion Research, 1973). Overall, the picture of the vocational graduates' personal and social characteristics appears to be positive. This finding is supported by the results of the one *less rigorous study* (Texas Advisory Council for Technical/Vocational Education, 1978) and the two *national studies* (Fetters, 1974b; 1975).

D. Citizenship. No differences were detected in the voting behavior of vocational and nonvocational graduates (Conroy and Diamond, 1976; Hu et al., 1968). The rate of voting was low for both groups, suggesting that generally citizenship behavior should receive more emphasis. The Ohio Department of Education (1979) found a similarly low rate of voting, while the Texas Advisory Council for Technical/Vocational Education (1978) found that a majority of the vocational graduates felt that their program had helped them become better citizens. Citizenship was not addressed at the national level.

Postsecondary Level Studies

I. Employment

Results are summarized below for the following variables: employment/unemployment, occupation related to training, earnings, employee satisfaction and employer satisfaction.

A. Employment and unemployment. Two comparative studies found that postsecondary vocational education graduates experienced less unemployment than did individuals who had no postsecondary training or who were enrolled in a nonvocational postsecondary program (Bowlby and Schriver, 1969; DeVaney, 1974). A third comparative study by Shymoniak (1972) found that selected vocational areas had lower unemployment rates than general graduates (i.e., office, trades and industry, and technical). The results of eighteen studies that examined unemployment rates for postsecondary graduates support the finding that vocational education graduates tend to have low rates of unemployment. Of the seventy-four separate percentages reported for unemployment by program area, fifty-seven were below 10 percent. No differences by program areas are notable at the postsecondary level (in contrast to the secondary level).

An additional fifteen *less rigorous studies* were located that reported unemployment rates for vocational education graduates. Of the thirty-four reported percentages, twenty-seven were below 10 percent, thus supporting the findings of the *more rigorous studies* discussed above.

A *national study* of graduates of 103 technical and community colleges yielded an even lower rate of 2.5 percent unemployment (Gartland and Carmody, 1970).

B. Occupation related to training. A majority of the postsecondary level vocational students find employment that is related to the occupational areas in which they were trained. In sixteen *more rigorous studies*, sixty-two separate percentages representing individuals in occupations related to their training were reported. Of these sixty-two percentages, fifty-seven were greater than 50 percent and forty-nine were greater than 70 percent. No differences by program areas were noted at the postsecondary level.

The most frequently cited reasons for accepting employment outside the training field were: training insufficient, better job opportunity or pay in another field, and preferred to work in another field.

Eighteen *less rigorous studies* were located. In these studies, thirty-two separate percentages representing individuals in occupations related to their training were reported. All thirty-two of these percentages were above the 50 percentile, and twenty-seven were above the 70 percentile. These results are slightly more positive than those presented above for the *more rigorous studies*.

One *national study* found that 74 percent of the respondents were employed in training-related occupations (Noeth and Hanson, 1976).

C. Earnings. Insufficient information is available to draw conclusions on the impact of postsecondary vocational education (as compared to nonvocational education) on earnings. Differences in earnings were notable for vocational education program areas. The technical program area was associated with the highest earnings in five of the six *more rigorous studies*.

The results of two *less rigorous studies* supported the finding that technical graduates have the highest earnings. They also found that home economics graduates had the lowest salaries, and that males outearn females at the postsecondary level as well. No *national studies* were located which addressed the variables of earnings at the postsecondary level.

D. Employee satisfaction. Former vocational students are satisfied with their jobs. This is supported by four *more rigorous studies*, and one *national study*.

E. Employer satisfaction. Employers are satisfied with graduates of vocational programs, and in some cases are more satisfied than with other entry level workers. This is supported by the results of two *more rigorous studies* as well as ten *less rigorous studies*.

II. Education and Training

Results are summarized below for the following variables: basic skill attainment, academic achievement, attendance/dropout, occupational skill attainment, continuing education, and satisfaction with training.

A. Basic skill attainment. No studies were located which addressed the variable of basic skill attainment at the postsecondary level.

B. Academic achievement. Two *more rigorous studies* examined the grade point averages of postsecondary vocational graduates and dropouts. Both studies found that graduates had higher grade point averages; however, Ballo (1971) found that the difference was not significant. Von Stroh (1968) reported that black dropouts had the lowest grade point averagess.

C. Attendance and Dropout. Four *less rigorous studies* examined dropout rates for postsecondary students. These ranged from 25 percent (Hand, 1974) to 66 percent (Horvath, 1973). Iverson and Brown (1979) found that 25 percent of the community college dropouts indicated that they planned to return at a later date. Using an analysis of the *Class of 1972* data, Peng et al. (1977) found that graduates of high school vocational programs were more likely than college preparatory graduates to drop out of their college programs. This is an area in need of further research.

D. Occupational skill attainment. Since only one of the *more rigorous studies* addressed occupational skill attainment at the postsecondary level, no general conclusions can be drawn. One technique used in this study might be useful for further research. The author did attempt to control for academic ability and motivation. By using grade point averages, class standing, and scores on the Vocational Commitment Index, the author was able to make firmer conclusions concerning the effect of the instructional programs (Weiss, 1974).

In a *less rigorous study* of allied health graduates, Perelle (1975) found that 57 percent passed the licensing examination on the first try, an additional 37 percent passed by the third try, and only 3 percent never passed.

E. Continuing education. Research on continuing education at the postsecondary level focuses primarily on community and junior college graduates who go on to four-year institutions. The results of fifteen of the *less rigorous studies* suggested that a very low percentage of postsecondary vocational graduates continue their education for more than two years. The percentage was generally below 20 percent, with less than 10 percent being most frequently reported.

F. Satisfaction with training. Similar to the secondary level studies, postsecondary level research also indicated that a majority of the graduates report satisfaction with their training. This conclusion is based on the findings of fifteen *more rigorous studies* and nine *less rigorous studies*. Additional research is required in order to determine specific aspects of programs which were satisfactory and reasons for the satisfaction.

III. Ancillary Effects

Insufficient information is available for the variables of aspirations, attitudes and values, feelings of success, or citizenship for postsecondary graduates to allow drawing any conclusions. If these are judged to be important effects for vocational education, then additional research is warranted. The results of the available studies are summarized below.

A. Aspirations. Von Stroh (1968) did not address the topic of aspirations in the same manner as it was addressed in the secondary level literature. Rather than looking at aspirations concerning continuing education, he investigated the students' occupational goals before and after graduation. He found that interest and high pay were the highest rated reasons for choosing an area. Six months later, better opportunities and higher salary were mentioned as occupational goals that led to a change in jobs. The data are not comparable from pre-to-post testing, therefore, it is difficult to draw conclusions from this study.

B. Attitudes and values. Brightman's study (1973) revealed slight, but not significant, changes in attitudes toward college in general and specific courses for groups of cooperative education and introductory psychology students. Before conclusions can be drawn about this issue, additional research must be undertaken into the effect of vocational and cooperative education on students' attitudes.

C. Feelings of success. The postsecondary data are too limited in the area of feelings of success to draw any firm conclusions. Additional research in this area is required.

D. Citizenship. The Ohio Department of Education (1979) reported that 9 percent of the postsecondary graduates had voted in the past six months. Elson (1972) found that graduates belonged to and were officers in civic clubs more often than nongraduates.

Discussion

Although many questions remain unanswered, sufficient evidence exists to indicate that (at least at the postsecondary level) participation in vocational education is associated with higher levels of employment, or conversely, less unemployment. Most vocational students (some figure greater than 50 percent at the secondary and even higher at the postsecondary levels) are obtaining jobs in the occupational areas in which they were trained. This suggests that these former students are being hired for jobs that require specialized training. In addition, the preponderance of evidence suggests that employers are satisfied with vocational graduates and that these graduates are satisfied with their jobs.

The evidence on the other variables is not so encouraging. Some studies found vocational students earned more initially, but the difference disappeared after approximately five years. Other studies found no such advantage. Obviously, stronger evidence of income effects is needed to claim that vocational education can be an effective means of reducing poverty. On the other hand, the lack of significant income differences suggests that participation in vocational education does not automatically lead to "less financially rewarding" jobs.

Too little evidence is available to comment on the effects of vocational education for individuals with special needs or its effects in overcoming sex stereotyping.

With regard to educational effects, vocational graduates report being satisfied with training. Insufficient information is available to draw conclusions concerning the effects on basic skill and specific occupational skill acquisition. About one-third of vocational graduates continue their education beyond the secondary level. While this is lower than the percent of nonvocational graduates, it does suggest that the doors to higher education are not closed to vocational graduates. The question concerning whether vocational education prevents students from dropping out of school cannot be answered from the available evidence.

These, then, are the major findings of this review. How one interprets them will depend, of course, upon the evaluative standards applied. Assuming the actual rate of placement in related occupations is somewhere between 50 and 75 percent, is this acceptable or not? Recognizing that many students, both at the secondary and postsecondary levels, use vocational courses for purposes of occupational exploration, a 100 percent rate is neither likely nor desirable. Our educational system attempts to facilitate individual choices at all levels. A 100 percent rate would indicate to many observers that vocational programs are too effective in directing students to a limited range of potential occupations.

On the other hand very low rates of related placement would also be undesirable. They would indicate that most of the investment made to reach occupational skills was not yielding a return through the use of these skills in the labor force. Whatever standard is set will involve a trade off between considerations of enhancing individual choice and options and realizing the best possible return on investment in human capital.

With regard to the uncertainty regarding income advantages, Coustman and Steinmeier (1979) recently presented a theoretical analysis that concludes: " . we have seen that a vocational training program may produce maximum benefits to the workers at precisely that point where earnings differentials are narrowed to zero" (p. vi). The assumptions and reasoning underlying this conclusion are too complex for presentation here, and this one analysis is unlikely to change the widely-held expectation that vocational programs should yield labor market advantages. Nevertheless, this paper suggests that the fact that many studies have not detected consistent earnings and employment advantages for vocationally trained workers may be due to the way the labor market operates rather than difficiencies in vocational programs or in the studies that have examined them.

The evidence does indicate that vocational education is providing meaningful, employment-related education for many young people who do not plan to continue their education, and it is helping to meet the skill needs of employers. On the two criteria specified for evaluation in the Education Amendments of 1976—job-related placement and employer satisfaction—vocational education measures up rather well, if related placement in the 50 to 75 percent range is considered acceptable. The evidence on the broader social goals is either inconclusive or nonexistent at this time.

Implications for Future Research

Two types of implications for furture research are discussed. First, a general issue relating to the research methodology and reporting are presented. This is followed by a discussion of research implications related to the specific variables included in this review.

In terms of reporting research, more emphasis should be given to describing the educational program in order for researchers to know what the "treatment" actually is. Methods for classifying subjects as vocational, academic and general need attention. Use of actual transcripts with decision rules can insure a more accurate classification. The reliability and validity of instruments should be established and reported. More attention should also be given to reporting contextual factors which influence the effects of educational programs (e.g., unionization in specific occupations and economic conditions in the communities). Researchers should report the methodology used more completely and clearly, including sample size and response rates. Dependent variables should be chosen intelligently in order for them to represent legitimate outcomes for vocational education. If sound conclusions are to be drawn concerning the effects of vocational education, sound research must be more pervasively conducted, reported, and disseminated.

The problem of locating and acquiring research concerning the effects of vocational education highlights another implication for researchers. The methods for locating research for this review included the major computerized data bases, libraries, personal contacts with authors and state departments, as well as the National Advisory Council for Vocational Education. Despite the thoroughness of the search, it is recognized that all possible research has not been located. Researchers have an obligation to the educational community to report their findings in such a manner that they are accessible to others.

Specific areas in need of further research have been identified through this review. Because it is recognized that all research has not been included in this review, two conclusions could be drawn. First, the issues were addressed, but the research could not be located. The solution then is to improve the dissemination process (as was mentioned above). The second possible conclusion is that the research is not available, and it needs to be done.

There are also specific research needs relative to the independent and dependent variables included in this review. The effect of vocational education on special needs groups such as the handicapped and disadvantaged emerges as an area in need of further research. In addition, the area of equity for both sexes and all races is an important issue in need of more research. Less research was found for postsecondary than secondary effects, especially at the national level.

In the employment area, the definitions of employment and unemployment present a problem. Standardization of definition would insure that results are comparable across studies. This was also a problem with the earnings variable. Because earnings is an important indicator, increased research should be undertaken to improve the reliability of this measure. Comparisons of male and female earnings underscore the importance of the equity issue. The variable "occupation related to training" raises the question of how specific training should be, particularly at the secondary level. The research question of interest is: "Should emphasis be given to training students in specific occupational skills or in more general employability skills?" Measures of employer satisfaction are confounded because of a lack of equivalency in the types of jobs held by vocational and nonvocational graduates. Future research of employer satisfaction should explore ways to account for this variation.

The attainment of basic skills is an area in need of further research from two perspectives. First, the current level of attainment should be more carefully studied, and second, the proper balance in the curriculum between basic skill and occupational skill attainment should be explored. Better measurement and reporting of occupational skill attainment is also needed. The areas of attendance and dropout need additional research to answer the question "Can vocational education retain students in school who might otherwise have dropped out?" Also, what can be done to help dropouts after they have left school? The high rates of dropouts for minorities and those enrolled in nontraditional programs is another area of concern. Another question in need of research is "What role can counseling play in reducing dropout rates?" Two additional areas of research are related to the continuing education variable. Examination of and control for continuing education activities outside the traditional school systems should be included in future research. The other question concerns the degree of preparedness for postsecondary education that is experienced by secondary vocational graduates.

A much smaller body of data was located for inclusion in this review for ancillary effects than for education and employment. If the areas aspirations, attitudes and values, feelings of success, and citizenship are judged to be important effects of vocational education, then these areas are in need of further research.

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APPENDIX 1

Dialog File Search Method and Descriptors

DIALOG FILE SEARCH METHOD AND DESCRIPTORS

In conducting searches of the various Dialog files which are described below, specific descriptors were organized into sets or concepts, i.e., subject area, type of study, statistical treatment, etc. The designations of "AND" and "OR" that were used within each set and between sets are indicated. Any UF (used for) terms associated with descriptors immediately follow the descriptor and are noted by parentheses, e.g., vocational education (occupational courses, occupational training, vocational training). The ERIC searches that were conducted were not limited to any particular clearinghouses nor were they limited by the usage of publication codes.

All appropriate holdings with a publication date of 1968 reviewed were run between May and November 1979. While a search of the RIE/ERIC Dialog file normally includes CIJE, this file was excluded inadvertently by limiting the ERIC searches to materials published in 1968 or later. This oversight was corrected as an additional ERIC, AIM/ARM search was conducted that included CIJE. A search of the NTIS Dialog file was also conducted.

In searching the Dissertation Abstracts Dialog file a free context search was conducted. This is designated by the letter (w) appearing between two terms. This signifies that the two words linked by (w) had to appear next to each other in the title in order for a match to be found. The same procedure was followed in searching the SSIE Dialog file.

The descriptors to be used for the various searches evolved as the project progressed. An initial search of ERIC used only vocational education subject areas and types of studies for descriptors. This resulted in identifying a large proportion of nonempirically-oriented studies. The addition of descriptors that related to statistical treatment tended to produce more empirical studies. As additional variables were added new searches were run to include those variables, e.g., academic achievement, occupational skill acquisition.

While the question of the quality and relevance of the identified studies is addressed in the following section of the plan, it should be noted that, where the information is available, the number of studies identified, reviewed, and considered relevant appears below the description of each search. The following Dialog file searches have been conducted:

1. A search of RIE/ERIC Dialog file with the following descriptors was run on May 17, 1979,

   a. Set 1, "Subject area": vocational education (occupational courses, occupational training, vocational training), OR trade and industrial education (trade instruction, vocational industrial education), OR business education (commercial education), OR agricultural education, OR office occupations education, OR cooperative education (cooperative training, vocational work experience), OR distributive education (retail training), OR health occupations education, OR occupational home economics (home economics gainful employment, home economics wage earning), OR technical education (technical instruction).

AND

b. Set 2, "Type of study": follow-up studies (follow-up programs), OR vocational follow-up (occupational follow-up), OR longitudinal studies, OR graduate surveys, OR program evaluation OR program effectiveness, OR educational accountability.

AND

c. Set 3, "Statistical treatment": comparative analysis (comparative evaluation, comparative study), OR comparative statistics, OR comparative testing, OR control groups, OR experimental groups, OR correlation/DF, TI correlation studies, (statistical association methods), OR (statistical analysis mathematical statistics, multivariate analysis, statistical methods, statistical processes, statistical theory) OR multiple regression analysis (multiple regression models), OR analysis of variance (ANOVEA), OR analysis of covariance (ANCOVA).

Number of studies identified: 137

2. A search of RIE/ERIC Dialog file was run on May 17, 1979 with the descriptors:

   a. Set 1, "Subject area": vocational education (occupational courses, occupational training, vocational training).

   AND

   b. Set 2, "Outcome": academic achievement (academic performance, academic progress, academic success, educational achievement, educational attainment, educational level, scholastic achievement, scholastic preference, school achievement, performance, student achievement, student performance).

Number of studies identified: 155

3. A search of the ERIC/RIE Dialog file was run on November 13, 1979 which limited the studies identified to those subsumed within CIJE and using the descriptors:

   a. Set 1, "Subject area": vocational education (occupational courses, occupational training, vocational training, OR business education (commercial education), OR agricultural education, OR office occupations education, OR cooperative education (cooperative training, vocational work experience), OR distributive education (retail training), OR health occupations education, OR occupational home economics (home economics gainful employment, home economics wage earning), OR technical education (technical instruction).

   AND

   b. Set 2, "Type of study": follow-up studies (follow up programs), OR vocational follow-up occupational follow-up) OR graduate surveys, OR program evaluation, OR program effectiveness, OR educational accountability.

Number of studies identified: 242

120

4. A search of the ERIC/RIE Dialog file was run on September 27, 1979 using the descriptors:

   a. Set 1, "Subject area": vocational education, occupational courses, occupational training, (vocational training), OR adult vocational education, OR agricultural education, OR business education (commercial education), OR cooperative education (cooperative training, vocational work experience), OR distributive education (retail training), OR health occupations education, OR occupational home economics (home economics gainful employment, home economics wage earning), OR technical education (technical instruction), OR trade and industrial education (trade instruction, vocational industrial education).

   b. Set 2, " Skill area": basic skills (fundamental skills), OR communication skills, OR decision-making skills, OR home economic skills (home economics competencies), OR home-making skills, OR job skills (employable skills, job behaviors,vocational competencies, vocational skills), OR language skills, OR literacy (literacy skills), OR composition skills (literacy), OR mechanical skills (mechanical competencies), OR reading skills, OR speech skills (oral facility, oral skills, speaking skills), OR writing skills, OR achievement (achievement factors, achievement level, student progress), OR student improvement, OR achievement gains, OR achievement rating (achievement comparison), OR academic achievement, OR reading achievement (reading gain), OR vocational maturity, OR educational assessment, OR vocational development (career development) OR student evaluation (student appraisal), OR performance.

AND

   c. Set 3, "Type of study": follow-up studies (follow-up programs), OR vocational follow-up (occupational follow-up), OR longitudinal studies, OR graduate surveys, OR program evaluation, OR program effectiveness, OR educational accountability.

Number of studies identified: 53*
Number of studies reviewed: 22
Quality: Of those reviewed, one or two appear promising

5. A search of AIM/ARM Dialog file was conducted on September 27, 1979, as those displayed for item above.

Number of studies identified: 197
Number of studies selected for review: 34
Quality: Of the approximately 20 studies reviewed, four have some value. Two of those appear to be well done.

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*A second search was done to determine if the use of "occupational home economics" as opposed to "home economics" had resulted in not identifying relevant studies. The second search, using "home economics," resulted in the identification of only two additional studies, neither of which had any relevant data. This supports the supposition that the number of unidentified studies was trivial.

6. A search of Dissertation Abstracts Dialog file was conducted on May 17, 1979, using the following descriptors:

   a. Set 1, "Subject area": vocational (w) education, OR technical (w) occupation, OR occupational (w) education, OR technical (w) education.

   AND

   b. Set 2, "Research method": evaluation.

   AND

   c. Set 3, "Type of study": longitudinal (w) studies, OR follow-up, OR graduate (w) surveys, OR program (w) effectiveness, OR program (w) evaluation, OR student (w) achievement, OR student (w) benefits.

Number of studies identified: 33

7. A search of Dissertation Abstracts Dialog file was conducted on May 17, 1979 using the following descriptors:

   a. Set 1, "Subject area": vocational (w) education, OR technical (w) occupation, OR occupational (w) education, OR technical (w) education.

   AND

   b. Set 2, "Type of study": impact OR effectiveness.

Number of studies identified: 26

8. A search of Dissertation Abstracts Dialog file was conducted on September 27, 1979 using the descriptors:

   a. Set 1, "Subject area": vocational (w) education, OR agricultural (w) education, OR business (w) education, OR cooperative (w) education, OR distributive (w) education, OR health (w) occupations, OR home (w) economics, OR technical (w) education, OR trade (w) and (w) industrial (w) education.

   b. Set 2, "Skill area": skill.

Number of studies identified: 16
Number of studies reviewed: 3
Usable studies: 0

9. A search of the Smithsonian Science Information Exchange (SSIE) Dialog file was conducted on September 27, 1979 using the following descriptors:

   a. Set 1, "Subject area": vocational (w) education, OR agricultural (w) education, OR business (w) education, OR cooperative (w) education, OR distributive (w) education, OR health (w) occupations, OR home (w) economics, OR technical (w) education, OR trade and industrial education, OR occupational (w) education.

b. Set 2, "Skill area": basic (w) skills, OR employment, OR earnings, OR satisfaction, OR school (w) attendance, OR drop/out, OR drop (w) out, OR postsecondary (w) education, OR leadership, OR attitudes (w) toward (w) work, OR occupational (w) skills, OR work (w) habits, OR occupational (w) related, OR attitude (w) toward (w) work.

Number of studies identified: 300
Selected for request: 10

As the SSIE lists projects that have been operating only for the past two years, it is possible that results from these projects might not be available throughout traditional data sources. Therefore, a letter was sent to the principal investigator of projects dealing with the effects of vocational educatiuon requesting any unpublished reports that are available.

10. A search of the NTIS Dialog file was conducted on November 13, 1979, using the descriptors:

a. "Subject area": vocational education, OR business education, OR agricultural education, OR office occupations, OR cooperative education, OR distributive education, OR health occupations, OR occupational home economics, OR technical education, OR human capital, OR human development, OR human resources.

AND

b. "Type of study": follow-up studies, OR vocational follow-up, OR longitudinal studies, or graduate surveys, OR program evaluation, OR program effectiveness, OR educational accountability, OR studies, OR follow-up, OR surveys.

Number of studies identified: 280

APPENDIX 2

Printed Material That Accompanied Robert E. Taylor's Presentation

POLICY STUDY
ON THE EFFECTS OF PARTICIPATING IN VOCATIONAL EDUCATION

Public concern over the use of tax dollars is at a peak. All educational programs are being examined closely. Vocational Education, especially, is being called upon to demonstrate its effectivness.

One of the projects at The National Center for Research in Vocational Education that is examining the evidence on effectiveness is a comprehensive policy study on the effects on participants from taking vocational education. Studies and reports available from libraries and computerized data bases have been reviewed, however, a vast reservoir of untapped resources exists in the files of State Departments of Education. The National Center is asking you to attempt to identify any reports on annual follow-ups or other studies of effects that were conducted in 1968 or later and were not submitted to ERIC.

The particular kinds of effects which we are examining include:

Skill attainment

    Basic educational skills
    Specific occupational skills

Employment effects

    Employment-unemployment
    Earnings
    Student satisfaction with employment
    Occupation related to training
    Employer satisfaction with employee
    Student satisfaaction with training

Postsecondary education

    Participation in
    Satisfaction with preparation for

Work habits and attitudes

    Attitudes about intrinsic value of work
    General area of employability and work habits
    Personal characteristics
    Leadership qualities

If you have access to documents of this nature, please send them, as soon as possible to:

Donna M. Mertens, Ph.D.
The National Center for Research
in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

Your efforts can make a difference in national policy for vocational education. Please, share your studies with us.

Thank you.

APPENDIX 3

List of Unavailable Studies

UNAVAILABLE STUDIES

American Association of Community and Junior Colleges. *Types of Programs Offered in Two-Year Colleges*. Washington, D.C.: American Association of Community and Junior Colleges, 1977.

Baker, John Michael. "A Descriptive Study of Co-op/Non Co-op Attitudes Towards the Concomitant Segment of the World of Work," Unpublished paper, University of Houston, n.d.

Basserl, Jamshid. *A Design for Cooperative Merchandising Mid-Management Training in the California Public Community College*. (Document not available from EDRS). Ann Arbor, Michigan: University Microfilms, 1970. (ED 046 387 JC 710 038)

Bell, Ter[illegible] and others. "Vocational Education: '76 and Beyond." *American Vocational Journal*, May 1979. (EJ 139 036 CE 505 046)

Blankenship, Edward E. "The Occupational Status and Educational Needs of Agricultural Educatiuon Graduates of Texas Technological College." Master's Thesis, Texas Technological College, 1968.

Blanton, Lloyd H. *Recruitment and Student Success: Students of Agricultural Education at Clemson University*, 1959-1967 Clemson, South Carolina: Department of Agricultural Education, Clemson University, 1968.

Bodden, Wendell, et al. "How to Design a Cooperative Program." Manual prepared by the Special Affairs Committee of Cooperative Education Association, February 1971.

Braverman, H. *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*. New York: Monthly Review Press, 1974.

Brown, Francis J. "A Final Outcome Analysis to Compare the Effectiveness of an Experimental Business Education System Versus a Traditional Business Education System to Prepare Students to Secure Entry Jobs in Office and Retail Occupations." Doctor's Thesis, Wayne State University, 1968.

Ceely, William D. "A Study of Cooperative Education in Florida Community Colleges." Unpublished paper, Northeast Florida Cooperative Education Consortium, n.d.

Clemmons, Jesse S. "A Comparison of Student Competency in Two High School Auto Mechanics Programs." Master's Report, Department of Agricultural Education, North Carolina State University, 1968.

Cohen, A.M. et al. *College Responses to Community Demands*. San Francisco: Jossey-Bass, 1975.

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Cooperative Work Experience Project Report—Volume I. Unpublished paper. Mt. Hood Community College, 1971.

Cox, Steven Grahn. *A Study of Relationship Between Student Scores on Various Predictor Measures and Vocational Success of Students Who Were Followed Up One and Five Years Following Training in Selected Private Trade, Technical, and Business Schools.* Ph.D. dissertation, Iowa University, August 1968. (ED 055 209)

Cunningham, James B. *Cooperative Education: Program Study.* Unpublished paper, Xerox, August, 1972.

Deunk, Leon. "Factors Related to the Occupations of the Norris High School Male Farm Graduates." Master's Thesis, The University of Nebraska, 1968.

Ditmer, Wayne W. "A Study of Job and Educational Experiences of Vocational Agriculture Graduates in the Year 1957 from Selected North Dakota High Schools." Master's Report, Dakota State University, 1968.

Elson, Donald E. *Annual Local Evaluation of Vocational and Technical Education. Process and Forms for Conducting An Annual Evaluation of Vocational and Technical Education Programs.* Blacksburg: Virginia Polytechnic Institute and State University, Division of Vocational-Technical Education, February 1976. (VT 102 919 ED 118 999)

France, Doris. "A Follow-Up Study of the Business Education Graduates of John F. Kennedy High School, Bloomington, Minnesota." Master's Study, University of Minnesota, 1969.

Gillie, Angelo C. "Pennsylvania State University Associate Degree Technician Graduates: Some Observations." *Journal of Engineering Education.* 62, 7, 832-835, April 1972.

Ginsber, E. "Education and Money Making: The American Experience," in J. A. Lauwreys and D. G. Scanlon, Eds. *Education Within Industry: The World Yearbook of Education*, 1968. London: Evans Brothers, 1968.

Goodman, Patricia. *Is Vocational Education Effective?* May 1979.

Harris, Marshall A. "A Benfit-Cash Analysis of Selected Vocational Programs in Florida." Ph.D. Dissertation, Florida State University, 1972.

Hemler, Herman T. A comparative Analysis of Vocational and Regular High School Programs Via A Student Follow-Up Study, *Dissertation Abstracts International*, 33:673-A, August 1972.

Herr, Edwin L., Enderlein, Thomas E., and Martin, Randall B. *Comparisons of Success and Satisfaction Variables for High School Graduates from three Non-metropolitan School Districts.* University Park, Pennsylvania. Department of Vocational Education, The Pennsylvania State University, VDS Monograph Number 22, (In Progress).

Hindricks, Harley and Taylor, Graeme M. *Program Budgeting and Benefit Cash Analysis: Cases, Texts, and Readings.* Pacific Palisades, California: Goodyear Publishing Company, 1969.

Hodge, James Leslie. "Cooperative Office Eduation and Its Effect on Attitudes Toward Office Employment." Doctor's Thesis, Arizona State University, 1968. (Microfilm No. 68-14, 999)

Lupton, D. Keith. "Campus Stretching Through Cooperative Education." *Junior College Journal* 40 (February 1970): 5; 37-39. (ED 014 430 JC 500 129)

Mann, Martin, W. "Selected Agricultural Mechanics Abilities as Rated by Teachers of Vocational Agriculture." Master's Report, Kansas State University, 1968.

Martin, Glen R. "Job Satisfaction in Practical Nursing as A Function of Measured and Expressed Interests." Unpublished Doctoral Dissertation. Urbana: University of Indiana, 1968.

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Paul, Krishan, K. *An Assessment of the Oklahoma Private School Occupational Training Program with Implications for Statewide Planning.* Stillwater, Oklahoma: Oklahoma State University, 1970.

Pendleton, Mary Ann. "A Survey of High School and Junior College Cooperative Education Programs in Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, and South Dakota." Master's Study, Kansas State College of Pittsburg, 1968.

Pincus, F. "Tracking in Community Colleges." *The Insurgent Sociologist* (Spring, 1974), pp. 17-35.

Reyford, Edwin William. *Employment Opportunities, Training Needs and Vocational Education for the Graphic Arts in Missouri.* Dissertation, Missouri University . (VT 013 967 ED 054 384)

Riemann, Nancy J. "Values and Benefits Gained from Study of Vocational Homemaking by Selected Former Students," Master's Thesis, Kansas State University, 1968.

Roberts, Donald Rue. "An Assessment of the Secretarial and Clerical Programs in the Area Vocational-Technical Schools of Arkansas." Dissertation Abstract. The University of Mississippi. National Institute of Education, Volume 36/07, p. 4446 (No. ABD 76-00465), 1975.

Roderick, C. V. and Love, G. M. *Graduates of Agricultural Education at the University of Missouri—A Look at Their Employment Status from 1946-1967.* Staff Study. Columbia: Department of Agricultural Education, University of Missouri, 1968.

Rogers, David. "Vocational and Career Education: A Critique and Some New Directions." Vocational and Career Education 74 (May 1973): 471-511.

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APPENDIX 4

Descriptive Summaries and Characteristics of Studies

TABLE 18
SUMMARY OF NATIONAL, SECONDARY STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Andrisani and Kohen, 1975	National	Not Given 1970	Males aged 14-24 years (NLS)	5,225 males	3,993 interviewed	• Other: Collective Bargaining Coverage	Personal interviews
Center for Human Resources, no date	National	1968 Not Given	Young women 14-24 years (NLS)	5,159 females	94.2% completion rate	• Employment/ Unemployment • Wages	Interviews
Creech, 1974	National	1972 Not Given	Class of 1972	Not Given	16,409 students responded	• Basic skills	Mail survey, school records, and tests
Creech et al., 1977	National	1972	Secondary vocational and nonvocational graduates	21,000 students	17,726 respondents	• Occupational mobility • Job satisfaction • Employment/ Unemployment • Postsecondary education • Earnings	Mail survey
Coombs,	National	Not Given Initiated in 1960	Dropouts, data collected by Project Talent	440,000 students	Not Given	• Dropout rate • Basic academic skills	Mail survey
Dual Careers	National	 1967	Women, 30-44 years of age in 1967 (NLS)	5,393 females	5,083 (94.3%) responded	• Occupational status	Mail survey
Eckland, 1977	National	1972 1974-75	Class of 1972	22,364 students	20,872 or 93% responded	• Occupation related to training	Mail survey

TABLE 18 – Continued

SUMMARY OF NATIONAL, SECONDARY STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Eckland, 1976	National	1972 1976	Class of 1972	21,600 senior students from 1,200 high schools	17,726 senior students from 1,044 high schools	• Postsecondary attendance • Employment/ Unemployment	Mail survey
Eninger, 1972	National	1970 October 1970	Secondary graduates of vocational programs, Project Metro	34,710 graduates	15,749 (45.4%) responded	• Employment/ Unemployment • Occupation related to training • Satisfaction with training • Earnings/wages	Mail survey
Evans, 1973	National	1960-1973	Data on high school students (9th-12th grade) collected through Project Talent	440,000 students	Not Given	• Basic skills	Mail survey
Fetters, 1974	National	1972 Spring, 1972 Fall, 1973	Class of 1972	15,600 students	Not Given	• Other (student attitudes, orientation to work, goals)	Mail survey
Fetters, 1974	National	1972	Class of 1972	17,726 students	16,409 (93%) students responded	• Other (post-secondary plans)	Mail survey, school records and tests
Fetters, 1975	National	1972 1973-1974	Class of 1972	Not Given	21,300 (93%) responded	• Employment/ Unemployment • Wages • Postsecondary education • Achievement • Self-concept	Mail survey

TABLE 18 – Continued

SUMMARY OF NATIONAL, SECONDARY STUDIES

Author/ Year	Scope	Date of Graduation	Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Fetters, 1977	National	1972	October 1973- April 1974, October 1974, October 1976	Class of 1972	21,600 students	16,683 students responded to original questionnaire	• Other: postsecondary educational plans	Mail survey
Fetters, 1976	National	1972	1973	Class of 1972	21,600 students	16,683 students	• Postsecondary education	Mail survey, school tests and records
Fleming et al., 1975	National	1972	Not Given	Data from 1972 NLS study	17,726 students	Not Given	• Basic skills	Mail survey
Kohen and Parnes, 1970	National	Not Given	1968	Young men 14-24 years of age (NLS)	4,339 males	84.3% completion rate	• Employment/ Unemployment • Earnings	Personal interviews
Kohen, 1973	National		1969	Young men aged 14-24 years (NLS)	5,225 males	3,993 were contacted	---	Personal interviews
Kohen, Grasso, Myers, and Shields, 1977	National	Not Given	1971	Young men 14-24 years of age in 1966 (NLS)	5,225 initial 1966 sample	3,987 (76%) were interviewed	---	Personal interviews
Nolfi et al., 1977	National	1966, 1968, 1972	1966, 1968 1971, 1973	Class of 1972	5,225 men ages 14-24; 5,159 women, ages 14-24	Males: (1971)–76%; Females: (1972)–90%	• Dropout • Postsecondary education • Occupational type • Satisfaction with training • Job satisfaction • Employment/ Unemployment • Employment stability • Attitude toward job	Mail survey

TABLE 18 – Continued
SUMMARY OF NATIONAL, SECONDARY STUDIES

Author/ Year	Scope	Date of Graduation / Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Parnes et al., 1970	National	Not Given / 1966	Males aged 14–24 in 1966 (NLS)	5,713 males	5,030 (91.7%) completion	• Employment/ Unemployment • Postsecondary education • Attendance	Personal interviews
Noeth and Hanson, 1976	National	1970 / 1975	Five year follow-up of students completing ACT's Career Planning Program	4,350 students	2,594 (60%) responded	• Occupation related to training • Job satisfaction • Satisfaction with training	Mail survey
National Center Educational Statistics, 1975	National	1972	Class of 1972	---	---	• Job satisfaction • Occupation related to training • Satisfaction with training	---
Olson, 1977	National	--------	Data sources; NLS work experience of young men, NLS work experience of mature men, Class of 1972 (males only)	5,000 males aged 14–24 in 1966, 5,000 males aged 45–59 in 1966, and a sample of males from NLS Class of 1972	---	• Wages • Wage rates	Mail survey
Office of Planning, Budget, and Evaluation, 1976	National	1972	Class of 1972	---	---	• Occupation related to training	---
Office of Planning, Budget, and Evaluation, 1976	National	1972	Class of 1972 data	---	---	• Relation to training • Satisfaction with training	---

TABLE 18 – Continued

SUMMARY OF NATIONAL, SECONDARY STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Peng, 1977	National	1972	Class of 1972	5,916 students	Not Given	● Dropout and attendance	Mail survey
Tabler, 1976	National	1972	Class of 1972	23,000 students	21,350 respondents	● Postsecondary education ● Dropout ● Employment/ Unemployment ● Earnings/wages ● Job satisfaction ● Occupation related to training	Mail survey
Thompson, 1974	National	1972	Class of 1972	18,000 students	Not Given	● Relation to training ● Postsecondary educational plans ● Educational aspirations	---
Zeller et al., 1970	National	Not Given 1966, 1967	Men, 14–24 years of age in 1966 (NLS)	5,234 males	4,787 or 96.8% completion rate	● Other (educational aspirations)	Personal interviews

TABLE 19
SUMMARY OF NATIONAL, POSTSECONDARY STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Cohen et al., 1977	National	---	2 and 4 year cooperative and noncooperative college students	---	---	• Earnings • Relation to training	Mail survey
Cohen et al., 1977	National	---	2 and 4 year cooperative, and noncooperative students	---	---	• Earnings	Mail survey
Gartland, 1970	National	---	Vocational-technical graduates from 103 junior colleges	Not Given	Not given	• Employment/ Unemployment • Relation to training	Mail survey
Noeth and Hanson, 1976	National	--- 5-year follow-up	Students taking ACT's Career Planning Program	---	2594 (60%) return rate	• Occupation related to training • Job satisfaction	---

TABLE 20
SUMMARY OF MORE RIGOROUS, SECONDARY, REGIONAL STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Molner et al., 1973	Regional: Minnesota, North Carolina, and Ohio	1969-70 and 1970-71 1972	Secondary: Cooperative versus Non-cooperative versus Non-vocational	Employers: 200; Students: not clear	Employers: 90 (45%); Students: not clear	• Employment • Earnings • Work habits • Employer satisfaction • Dropout rate	Field study, school records, mail survey

TABLE 21

SUMMARY OF MORE RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation / Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Elson et al., 1976	State/ Virginia	1973-1975 / Survey: five months after the 1974 graduation; seven months after the 1975 graduation	Secondary vocational education graduates and early leavers who were judged to have obtained a marketable skill	29,227 for 1973 through 1975 samples	55% for the combined follow-up samples	• Employment/ unemployment • Earnings • Occupation related to training • Satisfaction with training • Postsecondary education training	Mail survey
Elson and Gerken, 1979	State/ Virginia	1978 / 1979	Secondary vocational graduates and those who left prior to completing a vocational program	15,879 students	56% response rate	• Employment/ unemployment • Occupation related to training • Earnings • Postsecondary education/training • Satisfaction with training	Mail survey
Farrington, 1974	State/ Ohio	1974 / 1974 (in school)	Secondary agricultural mechanics and non-vocational students	Not specified	156 respondents	• Specific occupational skills	Tests administered in school
Felstehausen et al., 1973	State/ Illinois	1971 / Not specified	Secondary vocational graduates and their employers	12,020 graduates and their employers	Students—43% Employers—84%	• Employment/ unemployment • Occupation related to training • Satisfaction with employee • Satisfaction with training • Employer satisfaction • Postsecondary education/training	Mail survey

TABLE 21 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Methods
Ludeman, 1976	State/ Minnesota	Not applicable 1974–75	Secondary vocational and nonvocational current students 17 years of age	Approximately 16,000 students	Approximately 16,000 students	• Basic educa-skills	In-school testing
Market Opinion Research, 1973	State/ Ohio	1964, 1970 Summer 1971, Summer 1972	Secondary vocational and nonvocational students	484 nonvocational students, 254 vocational students, 484 employers	Students: 257 nonvocational, 254 vocational Employers: 247 or 53%	• Continuing education • Earnings • Employer satisfaction • Satisfaction with training • Attitude toward work	Interviews
McCown et al., 1971	State/ New York	1969 1970	Secondary vocational education students (specialty areas)	2,960 students	1,574 (53.2%) responded	• Relation to training • Earnings • Employee satisfaction • Continuing education • Satisfaction with training	Mail survey
Oregon Department of Education and Coordinating Council, 1975	State/ Oregon	1974 Not specified	Vocational and nonvocational graduates and dropouts	4,130 students	2,065 (50%) respondents	• Employment • Relation to training • Employee satisfaction • Continuing education	Mail survey

TABLE 21 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Parker, Trujillo, and Gonzales, 1978	State/ New Mexico	1978 1978	Junior and senior students in secondary cooperative programs	Not specified	2,775	• Earnings	State school reports
Parker, Green, Trujillo, and English, 1978	State/ New Mexico	1977 Spring, 1978	Secondary vocational program completers	5,840 program completers	5,231 were followed up; 609 (10%) were not followed up	• Employment/ unemployment • Relation to training • Postsecondary education/ training	Teacher survey
Parker, Whaley, and Uranga, 1977	State/ New Mexico	1976 1977	Secondary vocational program areas	5,343 students	4,885 (91%) respondents	• Employment • Relation to training • Continuing education	Teacher survey
Resta and Temple, 1978	State/ New Mexico	Vocational dropouts during 1977-1978 school year May-June, 1978	Secondary (grades 9-12) vocational education dropouts	527 dropouts from 8 vocational education programs	214 dropouts	• Dropout rates	Mail survey and personal interviews
Parker, Whelan, Gonzales, Trujillo, and English, 1979	State/ New Mexico	1978 1979	Secondary program areas	5,749	4,496 (78%)	• Employment/ unemployment • Relation to training • Earnings • Employer satisfaction • Continuing education	School personnel and mail survey

TABLE 21 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristic	Original Sample Size	Response Rate	Dependent Variables	Method
Florida State Advisory	State/ Florida	Not specified 1975-1976	Secondary and postsecondary graduates in occupations requiring licenses	Unclear	Unclear	• Employment • Relation to training • Completion rate • Occupational	Mail survey and personal interview of educational personnel
Ghazalah, 1978	State/ Ohio	1971 1974 tax returns	Secondary T&I graduates who took the Ohio Trade and Industrial Education Achievement Test	10,731 graduates	86% response rate	• Employment/ unemployment • Earnings • Mobility	Examination of federal tax returns
Haynes, 1978	State/ Texas	1966-1969 Not specified	Secondary vocational graduates	Approximately 500,000 graduates	Not given	• Employment/ unemployment • Occupation related to training • Attendance/ completion • Dropout rate	Data obtained from files
Hu, Lee, Stromsdorfer, and Kaufman, 1968	State/ Pennsylvania	1959, 1960 1966, 1967	Secondary vocational, academic, and dropouts (by vocational specialty areas)	None specified	1,442 students 129 employers	• Employment • Earnings • Occupational interests • Voting behavior	Mail and personal interviews
Iowa Department of Public Instruction, 1979	State/ Iowa	1977 1979	Employers of 1977 vocational secondary graduates	6,894 students	4,040 (58%) employers	• Employer satisfaction	Mail survey

TABLE 21 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation / Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
A Report to the Iowa Department of Public Instruction, 1977	State/ Iowa	1974 / 1975	Employers of vocational graduates	300	252	• Employer satisfaction	Personal interviews
Richardson, 1975	State/ Indiana	1972 and 1973 / Not specified	Secondary vocational program areas	1,000	680	• Earnings • Related to training • Job satisfaction • Satisfaction with training	Mail survey
Richardson and McFadden, 1976	State/ Indiana	1972 and 1973 / 1974	Secondary vocational program areas	1,000	680	• Employment • Relation to training • Earnings • Continuing education	Mail survey
Troutman and Breshears, 1969	State/ Arkansas	1963 to 1967 / Not specified	Secondary vocational program areas	2,157	987	• Employment • Relation to training • Earnings • Attendance • Satisfaction with training	Mail survey, school visits, employer interviews
Bergstrand, Esser, and Nelson, 1979	State/ Wisconsin	1976, 1977, and 1978 / Winter, Spring 1979	Secondary graduates from secondary vocational, practical arts, and nonvocational programs now attending a vocational, technical, and adult education program	Phase I: 663 students; Phase II: 710 students	Not given	• Postsecondary education/ training • School attendance and dropout rate • Satisfaction with training • Employment	School survey, mail survey

TABLE 21 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Bice and Brown, 1973	State/ Tennessee	1973 November, 1973	Vocational education graduates at the post-secondary and adult levels	40,289 students	70% response	• Employment/ unemployment • Occupation related to training • Postsecondary education/training	Teacher interviews
Career and Vocational Education System, Oregon Department of Education, 1977	State/ Oregon	1976 Winter, 1977	Secondary graduates and nongraduates	11,000 former vocational and general/college preparatory students	2,769 (25%) vocational respondents, 1,993 general/ college preparatory respondents	• Employment/ unemployment • Postsecondary education • Basic and job skill preparation	Mail survey
Career and Vocational Education System, Oregon Department of Education, 1978	State/ Oregon	1977 Not specified	Graduates and early leavers from vocational and general/ college preparatory secondary programs	Approximately 11,000 former vocational and general/college preparatory students	25% for both populations	• Employment/ unemployment • Occupation related to training • Earnings • Postsecondary educational training • Satisfaction with training	Mail survey
Conroy and Diamond, 1976	State/ Massachusetts	1969, 1973 Summer, Fall 1975	Students who had been enrolled in secondary occupational and non-occupational programs in Massachusetts	Original sample: (7,894) total for both graduating classes	Slightly over 43 percent	• Wages/earnings • Relation to training • Employment/ unemployment • Employee satisfaction • Postsecondary education • Voting behavior	Mail surveys and school records

TABLE 21 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation / Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Copa, Irvin, and Maurice, 1976	State/ Minnesota	1974 / April, May 1975	Secondary vocational and nonvocational education graduates	17,642 former students	82% return rate	• Employment/ unemployment • Earnings • Postsecondary education/ training	Mail survey
Durkee, 1975	State/ Wyoming	1976–1977 / Not specified	Former secondary vocational students	1,460 students	Data was obtained on 1,181 (81%) students	• Employment • Relation to training • Continuing education	Interviews with school personnel
Elson, 1978	State/ Virginia	1976–1977 / January, 1978	Former secondary vocational education completers and leavers	19,869 former students	10,961	• Employment • Relation to training • Earnings • Continuing education • Satisfaction with training	Mail survey

TABLE 22

SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Advisory Council for Vocational Education, 1978	State: Texas	1972–1973 1978	Vocational education graduates	12,489 graduates	1,931 (15.4%) responded	● Other (career opportunities) ● Work habits ● Satisfaction with training	---
Andrews & Roberts, 1974	State: Arkansas	1970 1974	Secondary, vocational and nonvocational students	1,749 students	36%	● Unemployment/ employment ● Occupation related to training ● Student satisfaction with training ● Earnings ● Postsecondary education ● Basic educational skills	Mail survey
Arizona State Advisory Council on Vocational Education, 1978	State: Arizona	1977 1978	Secondary, post-secondary, and adult students	---	Secondary: 784 Postsecondary: 4,136 Adults: 158	● Student satisfaction with training ● Earnings	---
Auburn University Occupational Research & Development Unit, 1974	State: Alabama	1971–1972 Not specified	Secondary students by vocational specialty area	15,545 students	4,685 (30%)	● Satisfaction with training ● Relation to training ● Employment ● Continuing education ● Earnings ● Work habits	Mail survey

TABLE 22 – Continued
SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Auburn University, 1974	State: Alabama	1971–1972	All vocational secondary graduates	1,225 students	26%	• Satisfaction with training • Employment/ unemployment • Occupational status • Occupation related to training • Continuing education • Earnings and wages • Other (career choice)	Mail survey
Bennett and Cvancara, 1971	State: Idaho	1962 1970	Secondary agricultural students	169 students	102 (60%)	• Unemployment/ employment • Postsecondary education • Occupation related to training	Mail survey
Educational Planning and Evaluation Services, 1975	State: Arkansas	1974 6 months after graduation	Secondary graduates	441 students and their teachers	333 (76%)	• Unemployment/ employment • Occupation related to training	Mail and telephone surveys
Ferguson, 1979	State: Missouri	1974 1978	Secondary college preparatory, general education, and vocational students	---	3,494 (22%) responded	• Employment • Employment related to training	Mail survey
Guerra, et al., 1974	State: Texas	Not specified 1973–1974	Employers	Not specified	86	• Employer satisfaction	Not specified
Horner et al., 1969	State: Wisconsin	1966–1968 1966–1969	---	---	---	---	---

TABLE 22 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation	Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Howell, 1968	State: Ohio	1965–66, 1966–67		Secondary Home Economics students	278 graduates, 34 dropouts, 46 employers	graduates and dropouts: 169 (61%); employers: 35 (75%)	• Work habits • Satisfaction with training • Employer satisfaction • Employment	Mail and telephone surveys
Howell et al., 1971	State: Illinois	1969, 1970	Summer 1970	Secondary Home Economics students	691 students, 110 employers	students: 188 (27%); employers: 75 (68%)	• Occupation related to training • Student satisfaction with employment • Employer satisfaction	Mail survey
Iowa Guidance Services, 1977	State: Iowa		1977	Secondary and postsecondary by specialty areas	18,176	Not specified	• Employment • Earnings • Relation to training • Continuing education	---
Jacob et al., 1975	State: West Virginia	Not specified	1975	Secondary vocational and nonvocational students	685 vocational and matched nonvocational students	77%	• Satisfaction with training • Plans after graduation	---
Kansas State Master Planning Commission, 1972	State: Kansas	1968		Vocational secondary students	Not given	77% responded	• Satisfaction with training	---

TABLE 22 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation - - - - - - - - Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Kaufman, 1968	State: Pennsylvania	1965-1967 - - - - - - - -	Vocational and nonvocational high school graduates	1,780 graduates	Not given	• Earnings • Employment stability • Occupation related to training • Job satisfaction • Satisfaction with training • Employer satisfaction	Mail survey
Kingston, 1970	State: New Jersey	1969 - - - - - - - - 1968-1969	All business graduates	1,650 graduates	1,562 (94%) responded	• Job satisfaction • Employer satisfaction with employee	Mail survey
Laska et al., 1973	State: Texas	1970 - - - - - - - - 27 months after graduation	Secondary vocational and nonvocational students	2,554 students	894 (35%) responded	• Employment/ unemployment • Earnings	Mail survey
Little & Whinfield, 1970	State: Wisconsin	1965 - - - - - - - -	Vocational technical and adult students	1,855 students	1,106 (55%)	• Employment/ unemployment • Continued education • Relation to training • Earnings • Satisfaction with training	Mail survey
Matthews, 1976	State: Oklahoma	- - - - - - - - 1975	Secondary disadvantaged and handicapped students	1,739 students	1,739 students	• Dropout	Interviews with school personnel

TABLE 22 – Continued
SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
McCowan et al., 1971	State: New York	1969 1970	Secondary vocational students	2,960 students	53%	● Unemployment/ employment ● Occupation related to training ● Student satisfaction with employment ● Earnings ● Student satisfaction with training ● Postsecondary education	Mail and interviews
McLean, 1975	State: Minnesota	1973 18 months after graduation	Secondary office education students	690 students 210 employers	Students: 548 (79.5%) Employers: 202 (96.2%)	● Unemployment/ employment ● Relation to training ● Employer satisfaction ● Employee satisfaction	Mail survey
Merrill, 1974	State: Idaho	1972, 1973 1971-1974	Secondary vocational education students	926 students	309 (33%)	● Student satisfaction ● Relation to training ● Employee satisfaction ● Specific skills	Mail survey

TABLE 22 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Michigan State Advisory Council for Vocational Education, 1971	State: Michigan	1961 1970	Secondary vocational education graduates	400 parents, 220 employers, and 420 graduates	57% of students responded	• Employment • Earnings • Job satisfaction • Employer satisfaction • Satisfaction with training	Mail survey, interviews
Morton, 1977	State: Oklahoma	1975–1976 Not given	Secondary vocational technical program graduates	1,215 graduates	413 (34%)	• Satisfaction with training • Employer satisfaction • Employment/ unemployment	Mail survey, school records
Morton et al., 1975	State: Oklahoma	1970–1974 1975	Secondary, postsecondary combined	---	---	• Employment • Relation to training • Continued education	---
Niss, 1977	State: Illinois	Not given	Employers in the state of Illinois	1,379 employers from seven sectors	384 (28%) responded	• Employer satisfaction with employee	Mail survey
Ohio Department of Education, 1979	State: Ohio	1977–1978 1978	Secondary and postsecondary students	Not given	67,550 (92%)	• Employment • Continuing education • Relation to training • Voting • Earnings	Compiled from LEA reports

TABLE 22 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Ohio Legislative Services Commission, 1978	State: Ohio	1976	Secondary vocational education graduates	551 graduates	Not given	● Occupation related to training ● Work attitudes ● Employee satisfaction ● Job satisfaction	Mail survey
Paul et al., 1972	State: Kentucky	1970–1971 1972	Secondary, postsecondary and adult combined	---	5,189 (48%)	● Employment ● Relation to training ● Earnings ● Dropouts ● Job satisfaction ● Mobility	Mail survey and interviews
Quesada et al., 1972	State: Connecticut	1961, 64, 67, 70 1972	Secondary vocational agriculture graduates	533 graduates	253 (51%)	● Postsecondary education ● Unemployment/ employment ● Earnings	Mail survey
Righthand, 1977	State: Connecticut	1965, 1968, 1971 1974–1975	Distributive Education graduates	2,132 graduates	798 (37.4%) responded	● Employment/ unemployment ● Salary and wages ● Satisfaction with training ● Job satisfaction ● Job relatedness	Mail survey
Schindler et al., 1975	State: Wisconsin	1971–1975 1975	Auto body vocational technical and adult education	125 students and 100 employers	64 (51.2%) students and 68 (68%) employers	● Student satisfaction with training ● Student satisfaction with employment ● Employer satisfaction	Mail survey

TABLE 22 – Continued
SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Smiley, 1976	State: North Dakota	Not specified 1976	Employers of secondary and postsecondary students	482 employers	191 (40%)	• Employer satisfaction • Work habits • Relation to training • Basic skills	Interviews
South Dakota Advisory Council on Vocational Education, 1970	State: South Dakota	1969–1970 Not given	Secondary and postsecondary graduates	4,743 graduates	Not given	• Attendance • Employment/ unemployment	Mail survey
South Carolina Advisory Council on Vocational/ Technical Education, 1976	State: South Carolina	Not specified 1975	Employers of vocational secondary and postsecondary students	10,000 employers	1,161 (12%)	• Employer satisfaction	Mail survey
Strong, 1970	State: Wisconsin	1968–1969 1969–1970	Secondary vocational education specialty area	Not specified	2,654 students	• Continuing education • Employment	---
Talarzyk, 1975	State: Ohio	1974	Employers	1,000 employers	251 (25%) responded	• Employer satisfaction	Mail survey

TABLE 22 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, STATE STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Washington State Advisory Council on Vocational Education, 1975	State: Washington	Not specified 1974	Secondary vocational students and employers	Not specified	144 students, 144 employers	• Employer satisfaction • Satisfaction with training	Interviews and mail survey

TABLE 23
SUMMARY OF MORE RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation / Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Blackford et al., 1979	Local/ Michigan	Not specified / Not specified	2-4 year graduates from an Area Vocational-Technical High School	114 graduates from 12 programs	Not specified	• Employer satisfaction • Specific occupational skills	Personal interviews with employers
Brantner and Enderlein, 1972	Local/ Pennsylvania	1971 / 1969 and 1971	Secondary vocational and non-vocational dropouts and in-school youth	780	714 students 66 dropouts	• Attendance/ Dropout	School records
Dinger, Meyers and Berner, 1973	Local/ Pennsylvania	1969-70, 1970-71, 1971-72 / 6 months after graduation	Special education programs at the secondary level	6,391 students, 643 employers	Students: 3,004 or 47% responded Employers: 75% response rate	• Employment/ unemployment • Earnings • Occupation related to training • Postsecondary education/ training • Satisfaction with training • Work habits • Employer satisfaction	Mail survey
Duval County School Board, Jacksonville, Florida, 1979	Local/ Florida	1977-1978 / Not specified	Secondary vocational and academic graduates and their employers	381 students 59 employers	Students: 195 or 51% responded; Employers: 59 or 75% response rate	• Employment/ unemployment • Relation to training • Satisfaction with training • Employer satisfaction • Postsecondary education/ training	Mail survey

TABLE 23 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Enoch, 1977	Local/ Virginia	1975-1976 Not specified	Secondary vocational graduates and their employers	259 graduates	183	• Employment/ unemployment • Earnings • Satisfaction with training	Personal interviews
Henry, 1974	Local/ Tennessee	1970-1973 Not specified	Secondary graduates of vocational office education programs and their employers	106 students, 51 employers	Students: 80% Employers: 82%	• Employment/ unemployment • Relation to training • Specific occupational skills • Job promotion	Mail and telephone surveys
Herrnstadt, Horowitz, and Sum, 1979	Local/ Massachusetts	1966, 1972 For class of 1966 – not specified; for class of 1972 – data collected in senior year and continued to 18 months after graduation	Secondary graduates from the following 4 programs: cooperative vocational, regular vocational, work study, and general/academic	1966: 320 students; 1972: 427 students	20% for class of 1966 68% for class of 1972	• Employment/ unemployment • Relation to training • Earnings • Work habits • Satisfaction with employment • Postsecondary education/ training • School attendance • Completion/ dropout	Mail questionnaires, telephone and in-school interviews

TABLE 23 – Continued
SUMMARY OF MORE RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Kaufman and Lewis, 1972	Local/ Pennsylvania	1966 Fall 1965-Fall 1966; October-December 1967; May-June 1969	Secondary vocational and nonvocational graduates and dropouts	453 graduates, dropouts, and completers	292 (64%) for first followup, 266 (59%) for 1969 followup	● Earnings ● Relation to training ● Employer satisfaction ● Employment ● Work habits ● Job satisfaction ● Satisfaction with training ● Continuing education	Questionnaire survey, personality inventory, and interviews
Katz, Morgan, and Drews, 1974	Local/ District of Columbia	1968, 1971, 1972 April 1974	Secondary: vocational and nonvocational (within vocational education specialty areas)	1,442 students to include: 1,191 vocational graduates, 251 academic graduates	495 vocational and 91 academic graduates were interviewed	● Employment ● Work habits ● Relation to training ● Earnings ● Employee satisfaction ● Satisfaction with training ● Postsecondary education	Telephone interviews
Loeb, 1973	Local/ New York	1965-1969 Not specified	Secondary graduates and dropouts of industrial and technical education programs	3,692 students	2,437 or 66% of the frame responded	● Employment status ● Postsecondary education ● Relation to training ● Earnings ● Satisfaction with training ● Dropout rate	Mail, telephone, and field follow-ups

TABLE 23 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
McQuay, 1974	Local/ Pennsylvania	1974–1975 Spring, 1973	Secondary one year versus two year vocational education students	71 eleventh-grade students; 46 tenth- and eleventh-grade students	117 respondents	• Specific occupational skills	Achievement tests administered in school
Preston, 1976	Local/ Florida	1974–1975 February–March 1976	Secondary/post-secondary vocational preparatory program completers	1,025 former students	643 or 63% response rate	• Employment • Earnings • Relation to training • Satisfaction with training • Continuing education	Mail survey with telephone follow-up of non-respondents
Robon, 1977	Local/ Ohio	1974–1975 1975	Secondary, two-year college and four-year college business programs	340 high school; 122 2-year college; 170 4-year college	112 high school; 94 2-year college; 123 4-year college	• Employment • Earnings • Relation to training • Satisfaction with training	Mail survey
Schowalter, 1974	Local/ Pennsylvania	1972 Spring, 1973	Employers of male secondary vocational and nonvocational students	64 employers	55 or 86% of the employers responded	• Employer satisfaction	Telephone surveys
Steagel, 1968	Local/ Ohio	In-school 1968	Business and office secondary students	473	447	• Occupation skill	In-school test administration
Strickler, 1973	Local/ Pennsylvania	1972 1969; 1972	Secondary: students from the following curriculum area: academic, business, secretarial, home economics	1,100 students	801 respondents or 73% response rate	• Occupational values • Vocational maturity	Tests administered in school by investigator

TABLE 23 – Continued

SUMMARY OF MORE RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Swanson, 1976	Local/ New York	1969, 1971, 1973 1974-1975	Secondary: vocational versus nonvocational students	1,050 students to include: 628 BOCES occupational; 422 non-BOCES, noncollege bound	619 respondents, or 59% response rate	• Employment • Earnings • Relation to training • Satisfaction with training	School records, mail, and telephone surveys
Terry, 1975	Local/ Minnesota	1970-1973 1974	Secondary former students of three cooperative training programs	228 students	119 (52%) students responded	• Employment • Relation to training • Continuing education • Satisfaction with training	Mail survey

TABLE 24
SUMMARY OF LESS RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation	Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Beck, 1971	Local/ Pennsylvania	1967-1968		Secondary cooperative office education students and a control group without cooperative office work experience	90 cooperative, office work experience subjects; 110 subjects without cooperative experience	200 students; 182 employment supervisors responded	• Employer satisfaction • Employment status	
Brantner, 1971	Local/ Pennsylvania	1971-1972	1968-1969 school year	Secondary, vocational and nonvocational retainers and dropouts	1,100: total population	Data was collected on 780 students	• Dropouts • Basic skills	Not specified
Brockman, 1972	Local/ Montana	1933-1946		Secondary cooperative work experience	Approximately 510	423 (75%)	• Unemployment/ employment • Postsecondary education • Earnings	Interview and mail survey
Caldwell, 1971	Local/ Washington				30 students		• Achievement • Basic skills • Attendance	
Chern, 1973	Local	Not given	Not given	Secondary vocational graduating from urban school district	593 graduates and a sample of 216 employers	Not specified	• Employment/ unemployment • Job satisfaction • Employer satisfaction • Occupation related to training • Employee satisfaction	

TABLE 24 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Cook, Brown, and Hanham, 1970	Local/ Michigan	1966-1967 1967-1968 Summer, 1968 Summer, 1969	Secondary distributive and business education students in intensive and traditional programs	846 students and 178 employees	Students: 710 (84%) Employers: 177 (100%)	• Employer satisfaction • Employment/ unemployment • Earnings	Interviews
Custer, 1973	Local/ Massachusetts	Subjects were still in school Not specified	Eleventh grade students in a cooperative education program and a matched comparison group	32 students: 16 core group, 16 matched comparison group		• Basic skills	
Crim and Ross, 1976	Local/ New Hampshire	1968, 1970 1972, 1974 Not specified	Secondary vocational graduates from six public high schools	1,266 graduates	840 responses, overall response	• Employment status • Continuing education	Telephone interviews
Franchak and Meehan, 1977	Local/ Pennsylvania	Not applicable 1975-1977	Seniors participating in vocational programs	Not given	212 AVTS and 118 non-AVTS students	• Employment/ unemployment • Relation to training • Career maturity	
Hess, 1975	Local/ Missouri	1972, 1973, 1974 Not specified	Secondary vocational education graduates	300 graduates	40% return rate	• Employment/ unemployment • Relation to training • Continuing education	Survey questionnaire and graduates follow-up needs
Hu et al., 1968	Local	6 years before survey 1966-1967	Secondary vocational agriculture, vocational comprehensive, general, academic students	Not specified	1,255 responded	• Employment • Earnings	Mail survey

TABLE 24 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
An Identification and Analysis of Effective Secondary Level Vocational Programs for the Disadvantaged, 1968	Local		Secondary vocational education (disadvantaged) students			● Basic skills ● Dropout ● Employment	
John F. Kennedy Memorial High School, 1969	Local/ New Jersey	Not specified Not specified	Not specified	Not specified	173 students, 138 graduates, and 40 employers responded	● Satisfaction with training ● Relation to training ● Job satisfaction	Mail and telephone surveys
McNelly and Kazanas, 1975	Local/ Missouri	1969	(Auto mechanics, carpentry, drafting, electronics, welding) Secondary vocational-technical education and cooperative education	559	219	● Earnings	Mail surveys
Massachusetts State Board of Education, 1970	Local/ Massachusetts	Not applicable 1964	Students in grades seven through twelve	Not given	Not given	● Dropout ● Employment/ unemployment	Mail survey and personal interviews
Mawyer, 1975	Local/ Virginia	1969 July 1974–July 1975	Secondary high school graduates	306 graduates	114 (37%) responded	● Attendance/ completion ● Postsecondary education	Mail and telephone surveys

TABLE 24 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Paulter, 1975	Local/ New York	1974 eight months after graduation	Secondary occupational education graduates	Phase I: 368 graduates Phase II: 368 graduates	Phase I: 335 (91%) responded; Phase II: 214 (58%) responded	• Satisfaction with training • Employment • Relation to training • Achievement	Mail survey
Perkins, 1973	Local/ Florida	1972-1973 1972-1973	Vocational career education students and a comparison group	65 vocational career group students and a comparison group	65 vocational career students and 65 comparison group students	• Basic education skills	Pre-post test measures
Poitevin, 1971	Local/ Iowa	1957-1966 Not specified	Male, secondary vocational agriculture graduates	372 male secondary graduates	Not specified	• Employment	Mail survey
Slick, 1974	Local/ Pennsylvania	1972	In-school vocational, in-school cooperative, and cooperative work experience students from seven schools	2,165 students	1,450 (67%) responded	• Employer satisfaction with employee • Satisfaction with training • Employment/ unemployment • Work habits • Earnings and wages • Job satisfaction • Employment stability	Mail survey
Sunnyside School District, 1974	Local/ Arizona	1972-1973 1974	Secondary vocational and academic graduates	Not specified	Data was collected on 416 graduates	• Employment status • Relation to training	

TABLE 24 – Continued

SUMMARY OF LESS RIGOROUS, SECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation / Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Stromsdorfer and Fackler, 1973	Local/ Ohio	1966, 1970 Not specified	Cooperative and non-cooperative graduates and their employers	813 cooperative students, 3,983 non-cooperative students, and a sample of 100 employers	1,441 students responded	● Attendance ● Achievement	Mail survey
Williams, 1975	Local/ Virginia	1968–1974 1974	Students completing health career programs	128 students	104 (87%) responded	● Relation to training ● Job satisfaction ● Employment status ● Satisfaction with tasks assigned	Mail survey
Workman, 1969	Local/ West Virginia	1962–1966 Data was collected 3–6 years after termination of training	Secondary industrial cooperative education students	80 students	76 (95%) responded	● Relation to training ● Present job satisfaction	Mail survey, school records, and employer reports

TABLE 25
SUMMARY OF MORE RIGOROUS, POSTSECONDARY, REGIONAL STUDIES

Author/ Year	Scope	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Wilms et al., 1974	Regional (four metropolitan areas)	1973 Oct. 1973–Feb. 1974	Postsecondary students in public and proprietary vocational training programs in 6 selected occupational areas	Beginning students: 1176; Graduating students: 1370; Graduates: 2270 Total – 4816	Beginning students: 1147; Graduating students: 1370; Graduates: 2270	● Employment/ unemployment ● Satisfaction with earnings ● Relation to training ● Adequacy of training	In-school questionnaires, telephone and personal interviews

TABLE 26
SUMMARY OF LESS RIGOROUS, REGIONAL, POSTSECONDARY STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Jung et al., 1976	Regional	1969–1971 1971	Proprietary and non-proprietary students in four occupational areas	13,549 graduates	5,215 (39.9%) of the graduates responded	● Placement ● Relation to training ● Salary	Mail questionnaire
Franken and Earnhart, 1976	Regional/ Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, Wisconsin	1974 Spring, 1976	Postsecondary and secondary vocational students	Postsecondary: 87,822; Secondary: 256,939	100%	● Unemployment/ employment ● Occupation related to training	Federal report forms and interviews with personnel in state departments

TABLE 27
SUMMARY OF MORE RIGOROUS, POSTSECONDARY STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Bice and Brown, 1973	State/ Tennessee	1973 1973	Postsecondary vocational subgroups	20,695	70%	• Employment • Relation to training • Continuing education	Teachers
Bowlby and Schriver, 1969	State/ Tennessee	1963-1968 February 1969	Postsecondary graduates, plus a matched group of high school graduates	Gross sample: 1701 AVTS trained students	Net sample: 58 matched pairs of AVTS and non-AVTS students	• Employment/ unemployment • Occupational mobility	Mail survey
Copa and Kleven, 1977	State/ Minnesota	1969-1972 Not specified	Graduates of 28 area vocational-technical institutes in Minnesota	5,834 students from vocational programs	Not given	• Employment/ unemployment • Job stability • Job selection pattern	Data source: vocational follow-up system and 1970 census population data
Eyler, Kelly, and Snyder, 1974	State/ Virginia	1966-1969 1972	Former postsecondary vocational students who had completed or left community college programs	11,623 former students	Overall response rate 61%, 73% for graduates, 56% for nongraduates	• Employment/ unemployment • Relation to training • Earnings • Postsecondary education/ training	Mail and telephone surveys to include follow-up of nonrespondents
Florida State Advisory Council on Vocational and Technical Education, 1976	State/ Florida	1973-1975 September 1975-January 1976	Graduates of 13 selected vocational programs requiring licenses for participation in the occupation	Not specified	No overall response rate given; response rates given by program area	• Relation to training • Postsecondary education/ training	Mail surveys and personal interviews

TABLE 27 – Continued

SUMMARY OF MORE RIGOROUS, POSTSECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Hamby, Harper, and Myers, 1978	State/ Montana	1970–1971 1971	Secondary and postsecondary graduates	857 secondary and postsecondary vocational students and 85 employers	440 (51%) students responded; 36 (42%) of the employers responded	● Employment/ unemployment ● Postsecondary education ● Attitudes toward education/ training ● Employer perceptions	Telephone interviews and mail questionnaires
Iowa Department of Public Instruction, 1979	State/ Iowa	1977 1979	Employers	6,984	4,040	● Employment ● Employer satisfaction	Mail survey
New Hampshire State Department of Education, no date	State/ New Hampshire	1975 September 1975	Graduates from New Hampshire's postsecondary vocational-technical educational system	712 students	Not given	● Employment/ unemployment ● Relation to training ● Earnings ● Postsecondary education/training	Not specified
Parker et al., 1979	State/ New Mexico	1978 Winter & Spring, 1979	Secondary and postsecondary vocational education graduates	5,749 secondary students	Secondary: 4,496 (78%) responded Postsecondary: 2,038 (85%) responded	● Relation to training ● Earnings ● Employer satisfaction ● Employment ● Continuing education	School personnel survey and mail survey

TABLE 27 – *Continued*

SUMMARY OF MORE RIGOROUS, POSTSECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Report to the Iowa Department of Public Instruction on Employer Reactions to Employees Trained in Preparatory Career Education Programs, 1977	State/ Iowa	1974 1974	A selected sample of employers of former students of career education programs from 3 merged areas	300 employers	229 employers responded on 252 students	• Employer satisfaction	Interviews
Senier and Enderlein, 1973	State/ Pennsylvania	1971 March, 1972	Postsecondary: graduates from Pennsylvania postsecondary programs	7,514 graduates	4,713 (63%) respondents	• Employment status • Relation to training • Continuing education	Mail survey
Schriver and Bowlby, 1971	State/ Tennessee	Prior to 1968 February-March 1969	Postsecondary (AVTS) vocational students and nonpostsecondary students	Target sample: 1,701 students	59 matched pairs	• Earnings • Relation to training • Continuing education	Mail survey
Texas Education Agency, 1977	State/ Texas	1976 Not specified	Occupational graduates of certificate and AA degree programs in Texas postsecondary institutions offering vocational programs	13,958 students		• Employment/ unemployment • Relation to training • Postsecondary education/training	Mail survey

TABLE 27 – Continued

SUMMARY OF MORE RIGOROUS, POSTSECONDARY STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Wisconsin Board of Vocational, Technical, and Adult Education, 1979	State/ Wisconsin	1978 Not specified	Former postsecondary occupational students who graduated or terminated training during 1977-1978 school year	17,240 students	overall response rate: 68%; for completers: 81%; for leavers: 40%	● Employment/ unemployment ● Relation to training ● Satisfaction with training ● Earnings	
Weiss, 1974	State/ Pennsylvania	1974 and 1975 1972, 1973, and 1974	Postsecondary hospitality education	41 students		● Employment ● Earnings ● Occupational skill ● Academic achievement	Tests administered in school; mail survey

TABLE 28

SUMMARY OF LESS RIGOROUS, POSTSECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation	Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Allen and Gutteridge, 1978	State/ New York	1962-1964, 1966, 1968, 1970-1971	Not specified	Male postsecondary graduates with majors in business related curricula	1,733 graduates	16% response rate	• Employment/ unemployment • Earnings • Relation to training • Satisfaction with employment • Work habits	Mail survey with telephone follow-ups of non-respondents
Cummins and Bender, 1972	State/ Ohio	1970-1971	Not specified	Students and dropouts of postsecondary Agricultural Technology programs at eight schools in Ohio and a sample of employers	Accessible population: 85 students and 56 employers	76 (70%) of students responded; 40 (62%) of the employers responded	• Employer satisfaction • Employment/ unemployment • Earnings • Earnings progression • Job satisfaction	Mail survey, school personnel, school records
Fawley, 1977	State/ South Dakota		one and five year follow-up surveys	Vocational/technical graduates and leavers of seven South Dakota postsecondary institutions	3,558 students and a sample of employers	1,123 (31%) of the students responded	• Earnings • Employment status	Mail survey
Hand, 1974	State/ Montana		1974		750 students	265 (30%) responded	• Satisfaction with training	Mail survey and interviews
Norvath, 1973	State/ Pennsylvania	1971-1974	Not specified		Not specified	449 students responded	• Basic skills • Continuing education	

TABLE 28 – Continued

SUMMARY OF LESS RIGOROUS, POSTSECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation	Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Iverson, 1970	State/ Ohio	1968-1969					• Satisfaction with training • Employment • Relation to training • Satisfaction with job • Earnings • Employer satisfaction	
Montana Commission on Post-secondary Education, 1974	State/ Montana	Not specified	Not specified		Not specified	170 respondents	• Satisfaction with training	School adminis-trators
Morton, Christen-son, and Hatfield, 1977	State/ Oklahoma	Not specified	Student data collected October-December, 1975; employers surveyed between February-March, 1976	Preparatory students in part-time adult classes	1,056 students; 184 employers	For students: 660 (62%) responded; 125 (68%) of employers responded	• Satisfaction with training • Employment status • Relation to training • Earnings • Employer satisfaction	
Nordgaard, 1975	State/ North Dakota	1971	1974-1975	Vocational graduates from five postsecon-dary schools in North Dakota	Targeted sample: 1,128 graduates	852 (76%) responded	• Employment/ unemployment • Relation to training • Occupational mobility • Earnings • Continuing education	Mail surv

TABLE 28 – Continued

SUMMARY OF LESS RIGOROUS, POSTSECONDARY, STATE STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Roesler, 1971	State/ North Carolina	Between 1966-1967 to 1970-1971 August 1971	Alumni of eight two-year institutions in the North Carolina Appalachian Region	Not specified	2,535 respondents for all eight institutions; responses ranged from 49-72% for the various institutions	• Employment status • Earnings	Mail survey
Seamens et al., 1972	State/ Wisconsin	1967-1971 Not specified	Auto mechanic/ automotive technology graduates of vocational-technical schools and their employers	1,054 students, 423 employers	55 (13%) of employers responded	• Employment status • Employer satisfaction • Relation to training • Job satisfaction • Earnings	Mail survey
Weiss, 1971	State/ Wisconsin	1967-1970 1970	Graduates from Apparel Arts, Textiles, Design and Tailoring programs and their employers	151 students, 106 employers	103 (68%) of students responded; 87 (82%) of employers responded	• Earnings • Employment/ unemployment • Occupational status • Relation to training • Employer satisfaction • Employee satisfaction • Postsecondary education/training	Mail survey
Wood, 1969	State/ Illinois	1966, 1967 January 1966-June 1968	Postsecondary agricultural graduates and leavers	166 students	102 (61%) responded	• Employment status • Dropouts • Earnings	Mail survey

TABLE 29
SUMMARY OF MORE RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Ballo, 1971	Local/ Idaho	Graduation: Students attending from Sept. 1966 through January 1970 1970	Graduates and non-graduates from a normal school granting A.A. degrees and certificates of completion	174 students	74%	• Employment/ unemployment • Student satisfaction with employment • Occupation related to training • Student satisfaction with training • Earnings • School attendance and dropout rate • Other (Grade Point Average)	Mail survey
Baretta, 1975	Local/ Illinois	1976-1977 Not given	All graduates of occupational programs during 1976-1977 from Moraine Valley Community College	366 graduates from 37 occupational areas	86% (overall) from both mail and telephone surveys	• Employment status • Earnings • Unemployment/ employment • Occupation related to training • Postsecondary education • Satisfaction with training • Adequacy of training	Mail survey with telephone follow-up of non-respondents
Carter, 1975	Local/ Virginia	1972-1973, 1974 graduates Not specified	Graduates of occupational technical programs at New River Community College	260 (1974) graduates, 37 (1973) graduates	Not given	• Earnings • Type of occupation • Relation to training • Student satisfaction with training • Postsecondary education	Mail questionnaire, telephone interview, and contact with faculty in each department

TABLE 29 – Continued

SUMMARY OF MORE RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Clark, 1975	Local/ Missouri	1970 through 1974 1974	Postsecondary community college vocational graduates and their employers	214 students and 105 employers	66% for students, 82% for employers	• Employment/ unemployment • Occupation related to training • Work habits • Earnings • Employer satisfaction with employee • Postsecondary educational training • Student satisfaction with training • Attitudes toward work	Mail survey
Davison, 1968	Local/ New York	1965 May 27, 1968	Community college graduates of 4 New York community colleges awarded associate science degrees	994	432 (43%)	• Employment/ unemployment • Employment status • Relation to training • Earnings • Postsecondary education	Mail survey
DeVaney, 1974	Local/ Arizona	1968 to 1973 June-August 1973	Ex-students enrolled in community college from 1968-1973, sub sample of Indian subjects, dropouts, vocational versus non-vocational	2,432	848 (35%)	• Employment/ unemployment • Relation to training • Employment status • Postsecondary education • School attendance, dropout rate • Satisfaction with training • Participation in Distributive Education	---

TABLE 29 – Continued

SUMMARY OF MORE RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Gammel, Brodsky, and Alfred, 1976	Local/ New York	1969 through 1975 1975	Postsecondary graduates who have earned AA degrees	2087 graduates	44%	• Employment/ unemployment • Occupation related to training • Work habits • Student satisfaction with training • Postsecondary educational training	Mail survey
Goodman, 1975	Local/ Indiana	1974 1974	Postsecondary graduates	536 graduates	98%	• Employment/ unemployment • Wages • Postsecondary education/ training	Mail survey with telephone followup of non-respondents
Hall, Gray, & Berry, 1975	Local/ Maine	1970, 1972, and 1974 Not given	Postsecondary building construction and machine tool technology program graduates	126 graduates	60%	• Employment/ unemployment • Occupation related to training • Student satisfaction with training • Other (desire in retraining/upgrading skills)	Mail survey and personal interviews
Hodges, 1975	Local/ California	1965 through 1972 1973	Postsecondary agricultural mechanics majors and their employers	225 students 87 employers	Students: 80% Employers: 72%	• Employer satisfaction with employee • Other (where students learned about skill area)	Mail survey

TABLE 29 – Continued
SUMMARY OF MORE RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Larkin, 1977	Local/ Maryland	1976 1977	Community college: health, technology and business graduates	440 graduates	382 (87%)	● Employment ● Relation to training ● Satisfaction with training ● Postsecondary education	Telephone survey
Office of Institutional Research, 1968	Local/ New York	1962 to 1966 1968	Postsecondary: vocational education students by specialty areas	419 students	201 (48%)	● Earnings ● Continuing education	Mail survey
Quanty, 1976	Local/ Kansas	1974-75 1975	Postsecondary: within voc-ed specialty areas	218 students	196 (90%)	● Employment ● Relation to training ● Earnings ● Continuing education ● Satisfaction with training	Telephone and personal interviews
Research Services Office, Lakeland Community College, 1975	Local/ Ohio	1974 1975	Postsecondary: vocational education specialty areas	116 students	103 (89%)	● Relation to training ● Earnings	Telephone survey
Research Office, South Western College	Local/ California	1972-73 1973	Postsecondary: specialty areas in vocational education	411 students	163 (40%)	● Employment ● Relation to training ● Continuing education ● Satisfaction with training	Mail survey

TABLE 29 – Continued

SUMMARY OF MORE RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Roberts, 1974	Local/ California	1967-1972 Not specified	Postsecondary: Community college students	1,100 students	506 (46%)	• Employment • Relation to training • Satisfaction with training • Continuing education	Mail and and telephone survey
Robon, 1977	Local/ Ohio	1974-75 1975	Secondary: business ed grads; postsecondary: 2 year and 4 year college business graduates	632 graduates	329 (52%)	• Employment • Earnings • Relation to training • Satisfaction with training	Mail survey
Shymonick, 1972	Local/ California	1969 1971	Postsecondary vocational education specialty areas and nonvocational group	297 students	241 (81%)	• Employment • Earnings • Relation to training • Postsecondary education	Mail survey
Tatham et al., 1975	Local/ Kansas	1971, 1973, 1974 1974	Postsecondary specialty areas in vocational education	451 students	428 (95%)	• Employment • Earnings • Relation to training • Satisfaction with training • Postsecondary education	Telephone and personal interviews
University of Hawaii Community College, 1972	Local/ Hawaii	1968 to 1970, 1971 1968 to 1970 were surveyed in 1970; 1971 in 1971	Postsecondary: vocational education specialty areas	764 students	420 (55%)	• Employment • Relation to training	Mailed and telephone survey

TABLE 29 – Continued

SUMMARY OF MORE RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size *	Response Rate	Dependent Variables	Method
Van Bramer, 1979	Local/ Wisconsin	1978 1978	Postsecondary: vocational education specialty areas	1541 students	993 (64%)	● Employment ● Relation to training ● Earnings ● Satisfaction with training	Mail survey
Von Stroh, 1968	Local/ Oklahoma	1966 Immediately before graduation, and six months after graduation	Postsecondary graduates and non-completers	239 students 223 dropouts	64% for students; information on dropouts was drawn from records	● Employment/ unemployment ● Student satisfaction with employment ● Occupation related to training ● Earnings ● Student satisfaction with training ● Other (Occupational interest, goals, and characteristics; school academic performances)	Original survey was administered in class; mail survey for the follow-up

TABLE 30
SUMMARY OF LESS RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Anthony and Miljus, 1974	Local/ Ohio	1965-1969 Not given	Male, postsecondary, vocational and non-vocational students	926	268 (30%)	• Satisfaction with training • Relation to training	Mail survey
Barsaleau et al., 1977	Local/ California	graduates since 1972 1977	Graduates of post-secondary animal health technician programs	---	69%	• Basic educational skills • Student satisfaction with employment • Postsecondary education	Mail survey
Brown, 1976	Local/ Texas	1965, 1970, 1974 1975	Postsecondary cooperative and noncooperative students	4,249 students	1,427 (37%) response rate	• Earnings • Work habits • Promotions • Relation to training • Employment • Continuing education • Satisfaction with training • Satisfaction with employment	Mail survey
Cummins and Bruder, 1973	Local/ Ohio	1971 graduates and 1971-1972 students	Technical, agricultural postsecondary students	---	654 students	• Employment related to training • Earnings • Drop-out • Employer satisfaction	---

TABLE 30 – Continued
SUMMARY OF LESS RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Dunbar, 1973	Local/ Michigan	1964-1968 1973	Postsecondary, commercial floriculture students	100 students and a sample of 41 employers	88 (88%) of students and 32 (78%) of employers responded	● Employment ● Earnings ● Employer satisfaction ● Satisfaction with training	Mail survey
Elson, 1972	Local/ Michigan	1966-1970	Postsecondary, landscape and nursery technician	162 students and 38 employers	133 (82%) of students and 30 employers responded	● Dropouts ● Employment ● Continuing education ● Earnings ● Job satisfaction ● Employer satisfaction ● Civic activities	Telephone and mail survey
Gillie and Mann, 1973	Local/ Pennsylvania	1955-1969 Not given	Postsecondary vocational students	1,748	57%	● Earnings ● Satisfaction with employment ● Relation to training	Mail
Hendrix, 1968	Local/ Texas	 1967-1978	Graduates of vocational education programs	2,916 graduates	594 (21%)	● Basic skills ● Grade point average	School records
Huber et al., 1971	Local/ Illinois	1967-1968, 1970-1971 1971	Agricultural mechanic, 2-year college students	---	151	● Earnings ● Postsecondary education ● Occupation related to training	Mail
Kanzik, no date	Local/ Minnesota	1966, 1967-1972 1973-1974	Graduates of Minnesota Technical College	859	55% 100% for 1972 graduates	● Employment/ unemployment ● Occupation related to training ● Employer satisfaction	Mail survey

TABLE 30 – Continued

SUMMARY OF LESS RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Langley, 1976	Local/ Texas	1973–1975 1976	Postsecondary air-conditioning graduates	120 students 8 employers	98 (82%) of students and 5 (63%) of employers responded	● Job satisfaction ● Employment related to training	Mail
Licata, 1977	Local/ Maryland	1974–1975 and August 1976 1977	Postsecondary medical assistant program graduate	41 students 4 employers	100% of students and employers	● Employment/ unemployment ● Postsecondary education ● Satisfaction with training ● Occupation related to training ● Employer satisfaction ● Other	Mail
Michaels, 1976	Local/ California	1973–1975 1976	Postsecondary nursing graduates	171 students and a sample of employers	59 (35%) of students responded	● Satisfaction with training ● Employment ● Earnings ● Continuing education ● Employer satisfaction	Mail
National Center for Research in Vocational Education, 1977	Local/ Ohio	1975–1976	Youth and adult correctional institution leaves	449 students of vocational programs	185 responded	● Satisfaction with training ● Occupation related to training ● Continuing education ● Employment ● Earnings ● Job satisfaction	Interviews

TABLE 30 – Continued

SUMMARY OF LESS RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
Pachucki, 1969	Local/ California	Graduates dating back to 14 years 1967	Graduates of Contra Costa College	178 graduates	78 (44%)	● Employment/ unemployment ● Satisfaction with training	Mail survey
Perelle, 1975	Local/ New York	1968-1975 1975	Allied Health postsecondary students	2700 students and 350 employers	593 (22%) of students and 32 employers	● Continuing education ● Reasons for unemployment ● Employer satisfaction ● Earnings ● Relation to training	Mail and telephone survey
Portland Community College	Local/ Oregon	1971 within 1 year of graduation	Postsecondary vocational students	766 students	527 (69%)	● Satisfaction with training ● Satisfaction with employment ● Occupation related to training ● Employment ● Continuing education ● Earnings	Mail
Queen and Rusting, 1978	Local/ California	Not given 1977	Program completers	947 students	374 (45%) responded	● Employment/ unemployment ● Occupation related to training ● Continuing education	Mail survey
San Mateo, 1969	Local/ California	– – – – – – – –	Employers of postsecondary cooperative students	Not given	135 employers	● Employer satisfaction	– – –

TABLE 30 – Continued

SUMMARY OF LESS RIGOROUS, POSTSECONDARY, LOCAL STUDIES

Author/ Year	Scope/ Location	Date of Graduation / Date of Survey	Sample Characteristics	Original Sample Size	Response Rate	Dependent Variables	Method
San Mateo, no date	Local/ California	– – – – – – – – –	Postsecondary students	–––	100 students 650 employers	● Student satisfaction with training Employer satisfaction	–––
San Mateo Community College District	Local/ California	1972, 1974, 1976 /		15,000 students	1995 (13.3%)	● Occupation related to training ● Employment/ unemployment	Mail survey
Standen, 1973	Local/ California	1972 / 1972	Postsecondary cooperative education students	–––	249 students	● Student satisfaction with training	–––
Teague, 1976	Local/ California	1975 / 1976	Postsecondary business, cooperative education students	400 students	217 (54%)	● Job satisfaction ● Earnings	Mail and telephone surveys
Wenzel, 1975	Local/ Florida	1972-1973 / 1974	Students enrolled in career education	2,039 students	569 (30%) responded	● Employment/ unemployment ● Satisfaction with training ● Occupation related to training	–––

APPENDIX 5

Selected Data From Individual Studies

The tables in this appendix present selected data of particular interest from individual studies. These tables were too long to be incorporated in the main body of the text. Several summary tables, based on these detailed tables, were included.

TABLE 31

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Agriculture			
	n	Percent Employment	Percent Unemployment	Percent Other
Haynes, 1970[a]				
1966 graduates	3720	94	3(3)[d]	3
1967 graduates	4595	96	3(3)	3
1968 graduates	4310	97	3(3)	3
1969 graduates	3330	96	4(4)	3
Felstehausen, 1973[b]	220	71	4(5)	25
Molnar, Pesut, & Mihalka, 1973	–	–	–	–
Bice & Brown, 1973	6173	51	3(6)	46
Tatham et al., 1975[b]				
1973 graduates	–	–	–	–
at 6 months	–	–	–	–
at 1 year	–	–	–	–
Tatham et al., 1975[b]				
1974 graduates	–	–	–	–
at 6 months	–	–	–	–
Elson et al., 1976[b]				
1974 graduates	611	51	10(16)	39
1975 graduates	929	55	10(15)	35
Parker, Whaley, & Uranga, 1977	910	55	2(4)	43
Career & Vocational Education System, Oregon Department of Education, 1977[b]	266	47	4(11)	49
Parker, Green, Gonzales, Trujillo, & English, 1978[b]	864	48	3(7)	49

a. Percentages in this study do not always sum to 100 because early leavers with marketable skills were not shown in the study's tables.
b. Percentages apply to only those who responded to the survey.
c. Distributive occupations were included in the business category in this study.
d. Figure in parenthesis calculated only for those in the labor force employed or seeking employment.

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Agriculture (continued)			
	n	Percent Employment	Percent Unemployment	Percent Other
Elson, 1978[b]	912	59	11(16)	30
Parker, Whelan, Gonzales, Trujillo, & English, 1979	876	31	3(9)	66
Elson & Gerken, 1979[b]	822	60	8(12)	32

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Business and Office			
	n	Percent Employment	Percent Unemployment	Percent Other
Haynes, 1970[a]				
1966 graduates	954	91	5(5)	4
1967 graduates	1964	94	6(6)	0
1968 graduates	3196	93	7(7)	0
1969 graduates	3211	94	6(6)	0
Felstehausen, 1973[b]	2762[c]	72	6(8)	21
Molnar, Pesut, & Mihalka, 1973	317	51	5	44
Bice & Brown, 1973	4335	44	4	52
Tatham et al., 1975[b]				
1973 graduates				
at 6 months	43	88	5	7
at 1 year	42	83	7	10
Tatham et al., 1975[b]				
1974 graduates				
at 6 months	47	91	4	5
Elson et al., 1976[b]				
1974 graduates	4999	42	11(21)	47
1975 graduates	868	47	14(23)	39
Parker, Whaley, & Uranga, 1977	1719	42	4(9)	54
Career & Vocational Education System, Oregon Department of Education, 1977[b]	1300	52	3(5)	45
Parker, Green, Gonzales, Trujillo, & English, 1978	1734	46	5(10)	49
Elson, 1978[b]	7839	51	13(20)	36
Parker, Whelan, Gonzales, Trujillo, & English, 1979	1794	37	6(14)	57
Elson & Gerken, 1979[b]	1964	53	13(20)	34

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Health			
	n	Percent Employment	Percent Unemployment	Percent Other
Haynes, 1970[a]				
1966 graduates	–	–	–	–
1967 graduates	1943	97	1(1)	2
1968 graduates	402	99	1(1)	0
1969 graduates	526	96	4(4)	0
Felstehausen, 1973[b]	159	58	11(16)	31
Bice & Brown, 1973	616	28	7(20)	65
Tatham et al., 1975[b]				
1973 graduates				
at 6 months	42	88	12	0
at 1 year	42	88	10	2
Tatham et al., 1975[b]				
1974 graduates				
at 6 months	56	93	4	3
Elson et al., 1976[b]				
1974 graduates	329	52	11(17)	37
1975 graduates	632	48	20(29)	32
Parker, Whaley, & Uranga, 1977	288	32	5(14)	63
Career & Vocational Education System, Oregon Department of Education, 1977[b]	159	48	1(4)	51
Parker, Green, Gonzales, Trujillo, & English, 1978	347	40	3(7)	57
Elson, 1978[b]	398	46	20(30)	34
Parker, Whelan, Gonzales, Trujillo, & English, 1979	306	23	5(18)	72
Elson & Gerken, 1979[b]	382	53	15(22)	32

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Special Programs			
	n	Percent Employment	Percent Unemployment	Percent Other
Felstehausen, 1973[b]	164	70	12(15)	18

	Technical			
	n	Percent Employment	Percent Unemployment	Percent Other
Haynes, 1970[a]				
1966 graduates	140	84	4(04)	3
1967 graduates	101	87	13(13)	0
1968 graduates	257	87	13(13)	0
1969 graduates	332	90	10(10)	0
Felstehausen, 1973[b]	–	–	–	–
Molnar, Pesut, & Mihalka, 1973	97	29	7	64
Bice & Brown, 1973	82	50	4	46
Tatham et al., 1975[b]				
1973 graduates				
at 6 months	76	88	3	9
at 1 year	77	84	3	13
Tatham et al., 1975[b]				
1974 graduates				
at 6 months	69	93	0	7
Elson et al., 1976[b]				
1974 graduates	–	–	–	–
1975 graduates	–	–	–	–
Parker, Whaley, & Uranga, 1977	–	–	–	–

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Technical (continued)			
	n	Percent Employment	Percent Unemployment	Percent Other
Career and Vocational Education System, Oregon Department of Education, 1977[b]	445	55	3(7)	42
Parker, Green, Gonzales, Trujillo, & English, 1978	–	–	–	–
Elson, 1978[b]	–	–	–	–
Parker, Whelan, Gonzales, Trujillo, & English, 1979	–	–	–	–
Elson & Gerken, 1979[b]	–	–	–	–

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Trade and Industry			
	n	Percent Employment	Percent Unemployment	Percent Other
Haynes, 1970[a]				
1966 graduates	4257	85	5(6)	4
1967 graduates	4467	95	3(3)	2
1968 graduates	4541	97	3(3)	0
1969 graduates	4825	97	3(3)	0
Felstehausen, 1973[b]	1598	86	6(6)	8
Molnar, Pesut, & Mihalka, 1973	264	44	3(6)	53
Bice & Brown, 1973	7590	46	3	51
Elson et al., 1976[b]				
1974 graduates	639	59	11(16)	30
1975 graduates	4768	63	12(17)	25
Parker, Whaley, & Uranga, 1977	1403	60	4(6)	36
Career & Vocational Education System, Oregon Department of Education, 1977[b]	182	54	5(8)	41
Parker, Green, Gonzales, Trujillo, & English, 1978	1466	57	3(5)	40
Elson, 1978	744	66	11(14)	23
Parker, Whelan, Gonzales, Trujillo, & English, 1979	1364	43	4(9)	53
Elson & Gerken, 1979[b]	4443	69	9(12)	22

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Distributive			
	n	Percent Employment	Percent Unemployment	Percent Other
Haynes, 1970[a]				
1966 graduates	2426	92	1(1)[a]	7
1967 graduates	4547	94	3(3)	3
1968 graduates	3265	99	1(1)	0
1969 graduates	4491	99	1(1)	0
Felstehausen, 1973[b]	–	–	–	–
Molnar, Pesut, & Mihalka, 1973	262	47	4	49
Bice & Brown, 1973	3390	50	2(4)	48
Tatham et al., 1975[b]				
1973 graduates				
at 6 months	17	100	0	0
at 1 year	15	86	7	7
Tatham et al., 1975[b]				
1974 graduates				
at 6 months	30	80	0	20
Elson et al., 1976[b]				
1974 graduates	508	49	11(18)	40
1975 graduates	696	62	13(17)	25
Parker, Whaley, & Uranga, 1977	–	–	–	–
Career & Vocational Education System, Oregon Department of Education, 1977[b]	235	58	7(14)	35
Parker, Green, Gonzales, Trujillo, & English, 1978	–	–	–	–
Elson, 1978[b]	604	60	13(18)	27
Parker, Whelan, Gonzales, Trujillo, & English, 1979	892	51	2(4)	47
Elson & Gerken, 1979[b]	867	64	8(11)	28

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Home Economics			
	n	Percent Employment	Percent Unemployment	Percent Other
Haynes, 1970[a]				
1966 graduates	3	100	0 (0)	0
1967 graduates	49	98	2 (2)	0
1968 graduates	163	89	11(12)	0
1969 graduates	278	90	10(10)	0
Felstehausen, 1973[b]	–	–	–	–
Bice & Brown, 1973	761	33	8(19)	59
Tatham et al., 1975[b]				
1973 graduates				
at 6 months	–	–	–	–
at 1 year	–	–	–	–
Tatham et al., 1975[b]				
1974 graduates				
at 6 months	–	–	–	–
Elson et al., 1976[b]				
1974 graduates	708	31	18(37)	51
1975 graduates	402	48	26(35)	26
Parker, Whaley, & Uranga, 1977	254	43	6(12)	51
Career & Vocational Education System, Oregon Department of Education, 1977[b]	60	63	5 (7)	32
Parker, Green, Gonzales, Trujillo, & English, 1978	565	42	6(12)	52
Elson, 1978[b]	464	47	26(36)	27
Parker, Whelan, Gonzales, Trujillo, & English, 1979	517	33	8(20)	59
Elson & Gerken, 1979[b]	490	45	29(39)	26

TABLE 31 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY STATEWIDE STUDIES

	Personal and Public Service			
	n	Percent Employment	Percent Unemployment	Percent Other
Parker, Green, Gonzales, Trujillo, & English, 1978	–	–	–	–
Elson, 1978	–	–	–	–
Parker, Whelan, Gonzales, Trujillo, & English, 1979	–	–	–	–
Elson & Gerken, 1979	–	–	–	–

TABLE 32
PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY LOCAL STUDIES

	Agriculture			
	n	Percent Employment	Percent Unemployment	Percent Other
Katz, Morgan, and Drewes, 1974[a]	8	100	0(0)	0
Durkee, 1975	148	62	2(3)	36
Terry, 1975[a]	–	–	–	–
Enoch, 1977[a]	–	–	–	–

	Distributive			
	n	Percent Employment	Percent Unemployment	Percent Other
Katz, Morgan, and Drewes, 1974[a]	15	93	–	–
Durkee, 1975	189	33	12(27)[a]	55
Terry, 1975[a]	35	74	0(0)	26
Enoch, 1977[a]	30	53	3(5)	44

[a] Percentages apply to those who responded to the survey

TABLE 32 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY LOCAL STUDIES

	Home Economics			
	n	Percent Employment	Percent Unemployment	Percent Other
Katz, Morgan, and Drewes, 1974[a]	–	–	–	–
Durkee, 1975	267	54	2(4)	44
Preston, 1976[a] (Total *n* = 1025)	–	50	18(26)	32
Enoch, 1977[a]	12	17	50(75)	33

	Health			
	n	Percent Employment	Percent Unemployment	Percent Other
Katz, Morgan, and Drewes, 1974[a]	13	100	0(0)	0
Durkee, 1975	8	50	12(19)	38
Preston, 1976[a] (Total *n* = 1025)	–	78	5(6)	17
Enoch, 1977[a]	–	–	–	–

TABLE 32 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY LOCAL STUDIES

	Business and Office			
	n	Percent Employment	Percent Unemployment	Percent Other
Henry, 1974[a]	85	69	7(9)	24
Loeb, 1973[a]	100	47	24(34)	29
Katz, Morgan, and Drewes, 1974[a]	165	92	–	–
Durkee, 1975	472	31	2(6)	67
Terry, 1975[a]	55	84	0(0)	16
Preston, 1976[a] (Total *n* = 1025)	–	71	15(17)	14
Enoch, 1977[a]	74	64	11(15)	25

TABLE 32 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY LOCAL STUDIES

	n	Percent Employment	Percent Unemployment	Percent Other
Loeb, 1973[a]	2801	55	6(10)	39
Katz, Morgan, and Drewes, 1974[a]	261	86	–	14
Durkee, 1975	376	40	3(7)	57
Terry, 1975[a]	29	86	3(3)	11
Preston, 1976[a] (Total *n* = 1025)		74	7(9)	19
Enoch, 1977[a]	77	53	16(23)	31

TABLE 32 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, SECONDARY LOCAL STUDIES

	Technical			
	n	Percent Employment	Percent Unemployment	Percent Other
Henry, 1974[a]	–	–	–	–
Loeb, 1973[a]	1559	40	4(9)	56
Katz, Morgan, and Drewes, 1974[a]	–	–	–	–
Durkee, 1975	–	–	–	–
Terry, 1975[a]	–	–	–	–
Preston, 1976[a] (Total *n* = 1025)	–	–	–	–
Enoch, 1977[a]	–	–	–	–

TABLE 33
SECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGES OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Agriculture			Distributive		
	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Felstehausen et al., 1973[a][b]	145	20	72	–	–	–
Haynes, 1970	14241	69	31	13187	89	11
Enoch, 1977	–	–	–	16	69	31
Elson, 1978	535	85	15	362	79	21
Durkee, 1975	91	70	30	65	52	48
Bice and Brown, 1973	3155	64	36	1698	78	22
Elson et al., 1976						
1974 graduates	291	82	18	230	81	19
1975 graduates	477	91	9	384	83	17
Elson and Gerken, 1979	493	87	13	555	72	28
Richardson and McFadden, 1975	37	53	47	105	45	55
McCowan, Mongerson, and Carter, 1971	68	50	50	77	43	57

[a] Percentages do not sum to 100 because some of the participants' occupations could not be classified.

[b] Relatedness determined using the *Dictionary of Occupational Titles.*

TABLE 33 – Continued

SECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGES OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Agriculture			Distributive		
	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Parker, Green et al., 1979	355	61	39	–	–	–
Parker, Whaley, and Uranga, 1977	361	53	47	–	–	–
Katz, Morgan, and Drewes, 1974	8	37	63	14	29	71
Tatham et al., 1975						
1973 graduates	–	–	–	13	85	15
1971 graduates	–	–	–	23	85	15
1974 graduates	–	–	–	24	75	25
Terry, 1975	–	–	–	16	31	69
Career and Vocational Education System, 1977	163	48	52	165	44	56
Texas Education Agency, 1977	98	79	21	659	79	21

TABLE 33 – Continued

SECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGES OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Health			Home Economics		
	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Felstehausen et al., 1973 [ab]	95	52	37	–	–	–
Haynes, 1970	2697	93	7	420	73	27
Enoch, 1977	–	–	–	2	100	0
Elson, 1978	182	73	27	220	64	36
Durkee, 1975	4	75	25	136	54	46
Bice and Brown, 1973	172	49	51	255	31	69
Elson et al., 1976						
1974 graduates	153	91	9	194	73	27
1975 graduates	245	87	13	153	87	13
Elson and Gerken, 1979	202	74	26	220	67	33
McCowan, Mongerson, and Carter, 1971	71	83	17	55	29	71
Parker, Green et al., 1979	113	72	28	206	44	56

[a] Percentages do not sum to 100 because some of the participants' occupations could not be classified.

[b] Relatedness determined using the *Dictionary of Occupational Titles*.

TABLE 33 – Continued

SECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGES OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

	Health			Home Economics		
Authors	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Parker, Whaley, and Uranga, 1977	81	74	26	86	63	37
Katz, Morgan, and Drewes, 1974	13	69	31	–	–	–
Tatham et al., 1975						
1973 graduates	37	97	3	–	–	–
1974 graduates	52	100	0	–	–	–
Career and Vocational Education System, 1977	86	61	39	45	36	64
Texas Education Agency, 1977	2278	92	8	77	90	10

TABLE 33 – Continued

SECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGES OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

	Technical			Trades and Industry		
Authors	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Felstehausen et al., 1973[ab]	–	–	–	1127	17	75
Haynes, 1970	675	83	17	16421	83	17
Enoch, 1977	–	–	–	40	55	45
Conroy and Diamond, 1976[b] (*n* = 2642)	–	–	–	–	37	63
Elson, 1978	–	–	–	489	83	17
Durkee, 1975	–	–	–	143	65	35
Bice and Brown, 1973	41	56	44	3495	64	36
Elson et al., 1976						
1974 graduates	–	–	–	360	78	22
1975 graduates	–	–	–	2761	87	13
Elson and Gerken, 1979	–	–	–	3066	81	19
Richardson and McFadden, 1975	–	–	–	157	48	52

[a] Percentages do not sum to 100 because some of the participants' occupations could not be classified.

[b] Relatedness determined using the *Dictionary of Occupational Titles.*

TABLE 33 – Continued

SECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGES OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Technical			Trades and Industry		
	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
McCowan, Mongerson, and Carter, 1971	78	41	59	281	47	53
Nassau County Board of Cooperative Education Services, 1973	765	41	59	1966	46	54
Parker, Green, et al., 1979	–	–	–	800	67	33
Parker, Whaley, and Uranga, 1977	–	–	–	755	70	30
Loeb, 1973	765	41	59	1966	46	54
Katz, Morgan, and Drewes, 1974	–	–	–	225	24	76
Tatham et al., 1975						
1973 graduates	65	91	9	–	–	–
1971 graduates	6	83	17	3	67	33
1974 graduates	59	92	8	–	–	–
Terry, 1975	–	–	–	23	74	26
Career and Vocational Education System, 1977	155	42	58	235	74	26
Texas Education Agency, 1977	493	89	11	2473	85	15

TABLE 33 – Continued

SECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGES OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Business			
	n	percent related jobs	percent unrelated jobs	
Felstehausen et al., 1973[a][b]	1945	27	68	
Haynes, 1970	7950	93	7	
Enoch, 1977	46	74	26	
Conroy and Diamond, 1976[b] (*n* = 2642)	–	29	71	
Elson, 1978	3987	73	27	
Durkee, 1975	128	70	30	
Bice and Brown, 1973	1925	73	27	
Elson et al., 1976				
1974 graduates	1950	87	13	
1975 graduates	362	83	17	
Elson and Gerken, 1979	1041	72	28	
Richardson and McFadden, 1975	182	69	31	

[a] Percentages do not sum to 100 because some of the participants' occupations could not be classified.

[b] Relatedness determined using the *Dictionary of Occupational Titles.*

TABLE 33 – Continued

SECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGES OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Business			
	n	percent related jobs	percent unrelated jobs	
McCowan, Mongerson, and Carter, 1971	223	83	17	
Parker, Green, et al., 1979	708	80	20	
Parker, Whaley, and Uranga, 1977	625	78	22	
Katz, Morgan, and Drewes, 1974	152	76	24	
Tatham et al., 1975				
1973 graduates	35	89	11	
1971 graduates	7	86	14	
1974 graduates	43	93	7	
Terry, 1975	35	91	9	
Career and Vocational Education System, 1977	801	54	46	
Texas Education Agency, 1977	1183	90	10	

TABLE 34

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Agriculture	Distributive
No Job Available in Training Area	McCowan et al., 1971	112	4	13
	Loeb, 1973	222	–	–
	Felstehausen, 1973	534	26	–
	Percent for Curriculum Area		28%	25%
Learned New Skill in Service or School	Loeb, 1973	166	–	–
	Percent for Curriculum Area		0%	0%
High School Training Insufficient	McCowan et al., 1971	72	8	13
	Loeb, 1973	116	–	–
	Felstehausen, 1973	199	6	–
	Percent for Curriculum Area		13%	25%
Couldn't Earn Enough Money in Related Field	Felstehausen, 1973,	121	8	–
	Loeb, 1973	222	–	–
	Percent for Curriculum Area		8%	0%

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Agriculture	Distributive
Better Job Opportunity or Pay in Another Field	McCowan et al., 1971	88	11	9
	Percent for Curriculum Area		10%	18%
Didn't Know What the Job was Really Like	Felstehausen, 1973	58 58	4 4	– –
	Percent for Curriculum Area		4%	0%
Didn't Like the Job or the Work	McCowan et al., 2971	94	3	7
	Loeb, 1973	425	–	–
	Felstehausen, 1973	210	8	–
	Percent for Curriculum Area		10%	14%
Other	McCowan et al., 1971	105	11	9
	Loeb, 1973	222	–	–
	Felstehausen, 1973	448	15	–
	Percent for Curriculum Area		25%	18%

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Agriculture	Distributive
No Chance for Promotion	Felstehausen, 1973	39	2	–
	Percent for Curriculum Area		2%	0%
Total Number of Respondents		3453	106	51

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Health	Home Economics
No Job Available in Training Area	McCowan et al., 1971	112	–	13
	Loeb, 1973	222	–	–
	Felstehausen, 1973	534	6	–
	Percent for Curriculum Area		14%	32%
Learned New Skill in Service or School	Loeb, 1973	166	–	–
	Percent for Curriculum Area		0%	0%
High School Training Insufficient	McCowan et al., 1971	72	3	13
	Loeb, 1973	116	–	–
	Felstehausen, 1973	199	4	–
	Percent for Curriculum Area		16%	32%
Couldn't Earn Enough Money in Related Field	Felstehausen, 1973,	121	3	–
	Loeb, 1973	222	–	–
	Percent for Curriculum Area		7%	0%

TABLE 34 – Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Health	Home Economics
Better Job Opportunity or Pay in Another Field	McCowan et al., 1971	88	4	4
	Percent for Curriculum Area		9%	10%
Didn't Know What the Job was Really Like	Felstehausen, 1973	58	–	–
	Percent for Curriculum Area		0%	0%
Didn't Like the Job or the Work	McCowan et al., 1971	94	6	8
	Loeb, 1973	425	–	–
	Felstehausen, 1973	210	6	–
	Percent for Curriculum Area		27%	20%
Other	McCowan et al., 1971	105	5	3
	Loeb, 1973	222	–	–
	Felstehausen, 1973	448	6	–
	Percent for Curriculum Area		25%	7%

TABLE 34— Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Health	Home Economics
No Chance for Promotion	Felstehausen, 1973	39	1	–
	Percent for Curriculum Area		2%	0%
Total Number of Responses		3453	44	41

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Office	Technical
No Job Available in Training Area	McCowan et al., 1971	112	28	17
	Loeb, 1973	222	–	–
	Felstehausen, 1973	534	229	–
	Percent for Curriculum Area		29%	28%
Learned New Skill in Service or School	Loeb, 1973	166	–	–
	Percent for Curriculum Area		0%	0%
High School Training Insufficient	McCowan et al., 1971	72	16	8
	Loeb, 1973	116	–	–
	Felstehausen, 1973	199	97	–
	Percent for Curriculum Area		13%	13%
Couldn't Earn Enough Money in Related Field	Felstehausen, 1973	121	50	–
	Loeb, 1973	222	–	–
	Percent for Curriculum Area		6%	0%

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Office	Technical
Better Job Opportunity or Pay in Another Field	McCowan et al., 1971	88	12	9
	Percent for Curriculum Area		1%	15%
Didn't Know What the Job was Really Like	Felstehausen, 1973	58	26	–
	Percent for Curriculum Area		3%	0%
Didn't Like the Job or the Work	McCowan et al., 1971	94	24	8
	Loeb, 1973	425	–	–
	Felstehausen, 1973	210	131	–
	Percent for Curriculum Area		18%	13%
Other	McCowan et al., 1971	105	14	18
	Loeb, 1973	222	–	–
	Felstehausen, 1973	448	236	–
	Percent for Curriculum Area		29%	30%

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Office	Technical
No Chance for Promotion	Felstehausen, 1973	39	12	–
	Percent for Curriculum Area		1%	0%
Total Number of		3453	875	

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Trades and Industry	Personnel and Public Service
No Job Available in Training Area	McCowan et al., 1971	112	37	–
	Loeb, 1973	222	–	–
	Felstehausen, 1973	534	255	18
	Percent for Curriculum Area		35%	23%
Learned New Skill in Service or School	Loeb, 1973	166	–	–
	Percent for Curriculum Area		0%	0%
High School Training Insufficient	McCowan et al., 1971	72	11	–
	Loeb, 1973	116	–	–
	Felstehausen, 1973	199	84	8
	Percent for Curriculum Area		12%	10%
Couldn't Earn Enough Money in Related Field	Felstehausen, 1973	121	49	11
	Loeb, 1973	222	–	–
	Percent for Curriculum Area		6%	14%

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Trades and Industry	Personnel and Public Service
Better Job Opportunity or Pay in Another Field	McCowan et al., 1971	88	39	–
	Percent for Curriculum Area		5%	0%
Didn't Know What the Job was Really Like	Felstehausen, 1973	58	26	2
	Percent for Curriculum Area		3%	3%
Didn't Like the Job or the Work	McCowan et al., 1971	94	38	–
	Loeb, 1973	425	–	–
	Felstehausen, 1973	448	55	10
	Percent for Curriculum Area		11%	13%
Other	McCowan et al., 1971	105	45	–
	Loeb, 1973	222	–	–
	Felstehausen, 1973	448	168	23
	Percent for Curriculum Area		26%	30%

TABLE 34– Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Trades and Industry	Personnel and Public Service
No Chance for Promotion	Felstehausen, 1973	39	2%	8%
	Percent for Curriculum Area			
Total Number of Responses		3453	825	78

TABLE 34—Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Respondents	Percentage of Total Responses
No Job Available in Training Area	McCowan et al., 1971 Loeb, 1973 Felstehausen, 1973	112 222 534	25%
Learned New Skill in Service or School	Loeb, 1973	166	5%
High School Training Insufficient	McCowan et al., 1971 Loeb, 1973 Felstehausen, 1973	72 116 199	11%
Couldn't Earn Enough Money in Related Field	Felstehausen, 1973 Loeb, 1973	121 222	10%
Better Job Opportunity or Pay in Another Field	McCowan et al., 1971	88	3%
Didn't Know What the Job was Really Like	Felstehausen, 1973	58	2%

TABLE 34—Continued

SECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Respondents	Percentage of Total Responses
Didn't Like the Job or the Work	McCowan et al., 1971 Loeb, 1973 Felstehausen, 1973	94 425 210	21%
Other	McCowan et al., 1971 Loeb, 1973 Felstehausen, 1973	105 222 448	22%
No Chance for Promotion	Felstehausen, 1973	39	1%

TABLE 35

PERCENTAGE OF GRADUATES WHO CONTINUE THEIR EDUCATION BEYOND THE SECONDARY LEVEL

More Rigorous Studies		Sample Size / Percentage							
Author		Voc Ed	NonVoc Ed	Agriculture	Business	Distributive	Health	Home Ec	Trade & Industry
Bice & Brown,	n	22,947	–	6,173	4,335	3,390	616	761	7,590
1973	%	16	–	11	25	21	28	19	11
Conroy &	n	2,642*	2,642*						
Diamond, 1976	%	48	81						
Durkee, 1975	n	1,460	–	34	182	59	2	–	–
	%	30	–	10	39	31	25	–	–
Duval County									
School Board,	n	7,205	1,760	–	–	–	–	–	–
Florida, 1979	%	27	60	–	–	–	–	–	–
Elson et al., 1976									
1973-74 follow-up	n	7,794	–	611	4,999	508	329	466	639
	%	30	–	25	34	18	22	33	15
1974-75 follow-up	n	8,313	–	929	886	696	632	402	4,768
	%	21	–	29	31	18	27	18	18
Elson, 1978	n	10,961	–	912	7,839	604	398	464	744
	%	28	–	26	31	21	31	19	14
Elson & Gerken	n	8,968	–	822	1,964	867	382	490	4,443
1979	%	20	–	25	29	20	26	19	14
Enoch, 1977	n	193	–	–	74	30	–	12	77
	%	37	–	–	49	30	–	42	27

* Total sample size

TABLE 35 – Continued

PERCENTAGE OF GRADUATES WHO CONTINUE THEIR EDUCATION BEYOND THE SECONDARY LEVEL

More Rigorous Studies		Sample Size / Percentage							
Author		Voc Ed	NonVoc Ed	Agriculture	Business	Distributive	Health	Home Ec	Trade & Industry
Eyler, Kelly, Snyder, 1974	n	6,049	–	–	3,081	504	317	–	1,967
	%	–	–	–	33	41	31	–	5
Felstehausen, 1973	n	5,203	–	223	2,787	259	160	–	1,607
	%	–	–	34	33	16	44	–	30
Goodman, 1975	n	523	–	13	69	178	139	–	142
	%	17	–	30	28	15	12	–	18
Katz, 1974	n	492	91	–	–	–	–	–	–
	%	49	78	–	–	–	–	–	–
Kaufman & Lewis, 1972	n	128	115	–	–	–	–	–	–
	%	39	84	–	–	–	–	–	–
Loeb, 1973	n	4,460	–	–	–	2,801	–	–	1,559
	%	17	–	–	–	5	–	–	37
Market Opinion Research, 1973	n	254	257	–	96	50	–	–	82
	%	49	50	–	42	62	–	–	49
McCowan et al., 1971	n	1,555	–	111	361	145	118	90	487
	%	43	–	39	33	43	38	33	37
N.H. State Dept. of Education (around 1975)	n	712	–	–	–	–	–	–	–
	%	12	–	–	–	–	–	–	–

TABLE 35 – Continued

PERCENTAGE OF GRADUATES WHO CONTINUE THEIR EDUCATION BEYOND THE SECONDARY LEVEL

More Rigorous Studies		Sample Size / Percentage							
Author		Voc Ed	NonVoc Ed	Agriculture	Business	Distributive	Health	Home Ec	Trade & Industry
Oregon Dept. of Education, 1975	n	2,065*	2,065*						
	%	35	51						
Parker, Green, Gonzales, Marguerite, Trujillo, & English, 1978	n	5,840	–	864	1,724	916	347	519	1,460
	%	28	–	37	32	18	38	28	20
Parker, Whalen, Gonzales, Trujillo, & English, 1979	n	8,991	–	1,097	3,473	2,604	565	948	849
	%	26	–	32	26	22	33	26	19
Parker, Whaley, & Uranga, 1976	n	5,343	–	952			288		
	%	30	–	30	36	20	45	25	23
Preston, 1976	n	1,025	–	**	**	**	**	**	**
	%	–	–	–	17	–	16	54	21
Quanty, 1976	n	117	–	–	38	37	56	–	9
	%	–	–	–	2	3	0	–	100
Research Office, Southwestern, 1974	n	163	–	–	18	–	44	48	36
	%	52	–	–	50	–	34	65	58
Richardson & McFadden, 1976	n	680	–	50	246	134	16	28	206
	%	–	–	17	16	14	33	17	24
Terry, 1975	n	91	–	–	41	27	–	–	25
	%	18	–	–	12	7	–	–	40

* Total sample size

** Individual sample sizes not given

TABLE 35 – Continued

PERCENTAGE OF GRADUATES WHO CONTINUE THEIR EDUCATION BEYOND THE SECONDARY LEVEL

Less Rigorous Studies		Sample Size / Percentage							
Author		Voc Ed	NonVoc Ed	Agriculture	Business	Distributive	Health	Home Ec	Trade & Industry
Auburn, 1974b	n	1,225							330
	%								27
Bennett and	n	102		–	–	–	–	–	–
Cvancara, 1971	%	36		–	–	–	–	–	–
Cook, Brown,	n	710							
& Lanham, 1970	%	18		–	–	–	–	–	–
Crim & Ross,	n	840		–	–	–	–	–	–
1976	%	16		–	–	–	–	–	–
Cummins &	n	76		–	–	–	–	–	–
Bender, 1972	%	9		–	–	–	–	–	–
Hess, 1975	n	1,394		–	415	–	–	106	873
	%	18		–	33	–	–	13	18
Iowa Guidance,	n	8,811		2,922	936	1,914	267	379	2,393
1977	%	21		23	27	20	42	22	15
Ohio Dept. of	n	54,132							
Education, 1979	%	10							
Quesada, 1972									
1961 graduates	n			12					
	%			39					
(continued)									

TABLE 35 – Continued

PERCENTAGE OF GRADUATES WHO CONTINUE THEIR EDUCATION BEYOND THE SECONDARY LEVEL

Less Rigorous Studies		Sample Size / Percentage							
Author		Voc Ed	NonVoc Ed	Agriculture	Business	Distributive	Health	Home Ec	Trade & Industry
Quesada, 1972 (cont.)									
1964 graduates	n			29					
	%			50					
1967 graduates	n			27					
	%			50					
1970 graduates	n			41					
	%			43					
Strong, 1970	n	8,173		2,576	3,977	362	--	38	1,220
	%	32		37	27	33	–	26	40
Sunnyside School District, 1974	n	416		–	–	–	–	–	–
	%	41		–	–	–	–	–	–
Williams, 1975	n	–		–	–	–	104	–	–
	%	–		–	–	–	47	–	–
Franken & Earnhart, 1976	n	52,937		–	–	–	–	–	–
	%	21		–	–	–	–	–	–

TABLE 36

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY STATEWIDE STUDIES

Authors	Trade and Industry			
	n	Percent Employment	Percent Unemployment	Percent Other
Bice & Brown, 1973	3735	62	15	23
Division of Postsecondary Vocational Education, New Hampshire, Department of Education, 1975	296	71	7	22
Department of Occupational Education and Technology, Texas Education Agency, 1977 *	–	76[a]	6	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979[b]	2533	76	3	21
Parker, Whelan, Gonzales, Trujillo, & English, 1974	915	72	4	24

[a] Percentage includes only respondents who were employed in a job directly related or closely related to training.

* Percentages refer only to those who responded to the survey (approximately 63% of the entire population of interest).

[b] Health and service occupations information was combined in this original study.

TABLE 36 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY STATEWIDE STUDIES

	Agriculture			
Authors	n	Percent Employment	Percent Unemployment	Percent Other
Bice & Brown, 1973	50	58	0	42
Division of Postsecondary Vocational Education, New Hampshire, Department of Education, 1975	–	–	–	–
Department of Occupational Education and Technology, Texas Education Agency, 1977 *	–	77[a]	3	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979[b]	482	95	5	–
Parker, Whelan, Gonzales, Trujillo, & English, 1974	26	54	15	31

TABLE 36 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY STATEWIDE STUDIES

Authors	Home Economics			
	n	Percent Employment	Percent Unemployment	Percent Other
Bice & Brown, 1973	148	26	20	54
Eyler, Kelly, & Snyder, 1974	–	–	–	–
Division of Postsecondary Vocational Education, New Hampshire Department of Education, 1975	–	–	–	–
Department of Occupational Education and Technology, Texas Education Agency, 1977*	–	80[a]	7	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979[b]	408	92	8	–
Parker, Whelan, Gonzales, Trujillo, & English, 1974	27	41	48	11

TABLE 36 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY STATEWIDE STUDIES

Authors	Office and Business			
	n	Percent Employment	Percent Unemployment	Percent Other
Bice & Brown, 1973	2215	41	12	47
Eyler, Kelly, & Snyder, 1974	3088	70	3	27
Division of Postsecondary Vocational Education, New Hampshire Department of Education, 1975	120	77	5	18
Department of Occupational Education and Technology, Texas Education Agency, 1977*	–	74[a]	12	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979[b]	2261	94	6	–
Parker, Whelan, Gonzales, Trujillo, & English, 1974	474	65	5	30

TABLE 36 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY STATEWIDE STUDIES

Authors	Distributive			
	n	Percent Employment	Percent Unemployment	Percent Other
Bice & Brown, 1973	46	61	0	39
Eyler, Kelly, and Snyder, 1974	–	–	–	–
Division of Postsecondary Vocational Education, New Hampshire Department of Education, 1975	–	–	–	–
Department of Occupational Education and Technology, Texas Education Agency, 1977 *	–	75[a]	2	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979[b]	–	–	–	–
Parker, Whelan, Gonzales, Trujillo, & English, 1974	193	72	4	24

TABLE 36 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY STATEWIDE STUDIES

Authors	Health			
	n	Percent Employment	Percent Unemployment	Percent Other
Bice & Brown, 1973	1523	56	8	35
Eyler, Kelly, & Snyder, 1974	324	75	2	23
Division of Postsecondary Vocational Education, New Hampshire Department of Education, 1975	230	71	13	16
Department of Occupational Education and Technology, Texas Education Agency, 1977 *	–	88[a]	4	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979[b]	3294	96	4	–
Parker, Whelan, Gonzales, Trujillo, & English, 1974	488	66	3	31

TABLE 36 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY STATEWIDE STUDIES

Authors	Technical			
	n	Percent Employment	Percent Unemployment	Percent Other
Bice & Brown, 1973	924	37	1	62
Eyler, Kelly, & Snyder, 1974	–	–	–	–
Division of Postsecondary Vocational Education, New Hampshire Department of Education, 1975	58	55	7	38
Department of Occupational Education and Technology, Texas Education Agency, 1977 *	–	84[a]	3	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979[b]	723	98	2	–
Parker, Whelan, Gonzales, Trujillo, & English, 1974	271	84	4	12

TABLE 37

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY LOCAL STUDIES

Authors	Trade and Industry			
	n	Percent Employment	Percent Unemployment	Percent Other
University of Hawaii, 1972	186	80	5	15
Shymoniak, 1972	68	43	–	57
Roberts, 1974[a]	41	88	–	12
Wilms, 1974	351	75	25[b]	
Hall, Gray, & Berry, 1975[c]	73	83	–	
Goodman, 1975	161	76	10	14
Clark, 1975[d]	24	83	12	5
Preston, 1976[e, f]	–	81	7	12
Quanty, 1976	9	89	0	11

[a] Percentages apply only to those who responded to the survey (46% of the sample).

[b] The categories of unemployed and other could not be separated for this table.

[c] Percentages apply only to those who responded to the survey (60% of the sample).

[d] Percentages apply only to those who responded to the survey (66% of the sample).

[e] Percentages apply only to those who responded to the survey (63% of the sample).

[f] The percentages reported for this article do not sum to 100.

[g] Percentages apply only to those who responded to the survey (44% of the sample).

[h] Percentages apply only to those who responded to the survey (87% of the sample).

[i] Percentages apply only to those who responded to the survey (86% of the sample).

TABLE 37 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY LOCAL STUDIES

Authors	Distributive			
	n	Percent Employment	Percent Unemployment	Percent Other
University of Hawaii, 1972	43	79	1	19
Shymoniak, 1972	–	–	–	–
Research Office, Southwestern College, 1974	–	–	–	–
Roberts, 1974[a]	43	88	–	12
Wilms, 1974	–	–	–	–
Goodman, 1975	41	63	12	24
Preston, 1976[e,f]	–	–	–	–
Quanty, 1976	37	95	0	5
Larkin, 1977[h]	–	–	–	–
Baratta, 1978	–	–	–	–

TABLE 37 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY LOCAL STUDIES

Authors	Agriculture			
	n	Percent Employment	Percent Unemployment	Percent Other
University of Hawaii, 1972	–	–	–	–
Shymoniak, 1972	15	47	–	53
Roberts, 1974[a]	6	83	0	17
Wilms, 1974	–	–	–	–
Hall, Gray, & Berry, 1975[c]	–	–	–	–
Goodman, 1975	13	69	0	31
Clark, 1975[d]	–	–	–	–
Preston, 1976[e, f]	–	–	–	–
Quanty, 1976	–	–	–	–

TABLE 37 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY LOCAL STUDIES

	Health			
Authors	n	Percent Employment	Percent Unemployment	Percent Other
University of Hawaii, 1972	33	88	3	9
Shymoniak, 1972	24	58	–	42
Research Office, Southwestern College, 1974	44	66	7	27
Roberts, 1974[a]	82	83	2	15
Wilms, 1974	480	88	12[b]	
Goodman, 1975	111	79	9	12
Preston, 1976[e,f]	–	83	5	12
Quanty, 1976	78	96	0	4
Larkin, 1977[h]	197	86	3	11
Baratta, 1978	127	89	2	9

TABLE 37 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY LOCAL STUDIES

Authors	Home Economics			
	n	Percent Employment	Percent Unemployment	Percent Other
University of Hawaii, 1972	–	–	–	–
Shymoniak, 1972	–	–	–	–
Research Office, Southwestern College, 1974	–	–	–	–
Roberts, 1974[a]	–	–	–	–
Wilms, 1974	–	–	–	–
Goodman, 1975	7	71	14	14
Clark, 1975[d]	–	–	–	–
Preston, 1976[e, f]	–	68	18	24
Quanty, 1976	–	–	–	–
Larkin, 1977[h]	–	–	–	–
Baratta, 1978	–	–	–	–

TABLE 37 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY LOCAL STUDIES

	Office and Business			
Authors	n	Percent Employment	Percent Unemployment	Percent Other
University of Hawaii, 1972	154	79	6	15
Shymoniak, 1972	51	61	–	39
Research Office, Southwestern College, 1974	36	72	0	28
Roberts, 1974[a]	162	80	–	20
Wilms, 1974	903	87	13[b]	
Goodman, 1975	91	59	14	27
Clark, 1975[d]	62	92	6	2
Preston, 1976[e, f]	–	71	15	13
Quanty, 1976	30	90	7	3
Larkin, 1977[h]	81	68	1	31
Baratta, 1978	65	89	8	3

TABLE 37 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY LOCAL STUDIES

Authors	Technical			
	n	Percent Employment	Percent Unemployment	Percent Other
University of Hawaii, 1972	16	75	6	19
Research Office, Southwestern College, 1974	36	72	3	25
Roberts, 1974[a]	122	89	1	10
Wilms, 1974	413	90	10[b]	
Hall, Gray, & Berry, 1975[c]	53	55	–	–
Goodman, 1975	106	66	8	26
Clark, 1975[d]	55	98	2	–
Quanty, 1976	46	89	2	9
Gammel, Brodsky, & Alfred, 1976[g]	922	77	9	14
Larkin, 1977[h]	104	55	5	40
Baratta, 1978	33	91	3	6

TABLE 37 – Continued

PERCENT OF RESPONDENTS EMPLOYED AND UNEMPLOYED BY STUDY AND PROGRAM AREA, POSTSECONDARY LOCAL STUDIES

Authors	Public Service			
	n	Percent Employment	Percent Unemployment	Percent Other
University of Hawaii, 1972	–	–	–	–
Research Office, Southwestern College, 1974	48	65	4	31
Roberts, 1974[a]	–	–	–	–
Wilms, 1974	–	–	–	–
Hall, Gray, & Berry, 1975[c]	–	–	–	–
Goodman, 1975	–	–	–	–
Clark, 1975[d]	–	–	–	–
Quanty, 1976	–	–	–	–
Gammel, Brodsky, & Alfred, 1976[g]	–	–	–	–
Larkin, 1977[h]	–	–	–	–
Baratta, 1978	89	90	6	4

TABLE 38

POSTSECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGE OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

	Agriculture			Distributive		
Authors	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Bice and Brown, 1973	29	83	17	28	100	0
Davison, 1968	–	–	–	40	50	50
Roberts, 1974	4	25	75	38	61	39
Parker, Whelan, et al., 1979	14	64	36	139	93	7
Quanty, 1976	–	–	–	35	97	3
University of Hawaii Community Colleges, 1972[b]	–	–	–	34	88	12
Wisconsin Board of Vocational, Technical, and Adult Education, 1979	347	85	15	–	–	–

[a] Degree of relatedness determined by author(s).

[b] Author used *Dictionary of Occupational Titles* in determining relatedness.

TABLE 38 – Continued

POSTSECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGE OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Health			Home Economics		
	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Florida State Advisory Council on Vocational and Technical Education, 1976	2069	94	6	–	–	–
Carter, 1975	16	100	0	–	–	–
Bice and Brown, 1973	858	94	6	39	87	13
Clark, 1975[a]	170	92	8	–	–	–
Davison, 1968	77	88	12	–	–	–
Roberts, 1974	68	94	6	–	–	–
Research Office, Southwestern College, 1974	23	96	4	–	–	–
Parker, Whelan, et al., 1979	320	91	9	11	73	27

[a] Degree of relatedness determined by author(s)

TABLE 38 – Continued

POSTSECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGE OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Health			Home Economics		
	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Quanty, 1976	75	100	0	–	–	–
Larkin, 1977	170	97	3	–	–	–
University of Hawaii Community Colleges, 1972[b]	29	90	10	–	–	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979	2919	87	13	348	68	32

[b] Author used *Dictionary of Occupational Titles* in determining relatedness.

TABLE 38 – Continued

POSTSECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGE OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

	Technical			Trades and Industry		
Authors	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Hall, Gray, and Berry, 1975	–	–	–	138	84	16
Florida State Advisory Council on Vocational and Technical Education, 1976	–	–	–	1663	88	12
Gammel, Brodsky, and Alfred, 1976	710	88	12	–	–	–
Carter, 1975	96	90	10	14	86	14
Bice and Brown, 1973	341	93	7	2321	83	17
Clark, 1975[a]	52	85	15	19	68	32
Davison, 1968	79	84	16	30	80	20
Roberts, 1974	108	63	37	36	53	47
Research Office, Southwestern College, 1974	25	76	24	–	–	–

[a] Degree of relatedness determined by author(s).

TABLE 38 – Continued

POSTSECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGE OF GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

Authors	Technical			Trades and Industry		
	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Research Services Office, Lakeland Community College, 1975	19	53	47	–	–	–
Parker, Whelan et al., 1979	227	92	8	657	90	10
Quanty, 1976	41	78	22	8	87	13
Larkin, 1977	57	84	16	–	–	–
University of Hawaii Community College, 1972[b]	12	83	17	149	87	13
Wisconsin Board of Vocational, Technical, and Adult Education, 1979	670	89	11	1929	79	21

[b] Author used *Dictionary of Occupational Titles* in determining relatedness.

TABLE 38 – Continued

POSTSECONDARY VOCATIONAL EDUCATION SUBGROUP STUDIES: PERCENTAGE OR GRADUATES IN OCCUPATIONS RELATED OR UNRELATED TO TRAINING BY PROGRAM AREA

	Business			Public Service		
Authors	n	percent related jobs	percent unrelated jobs	n	percent related jobs	percent unrelated jobs
Carter, 1975	60	90	10	–	–	–
Bice and Brown, 1973	905	93	7	–	–	–
Clark, 1975	50	90	10	–	–	–
Davison, 1968	124	85	15	–	–	–
Roberts, 1974	130	68	32	–	–	–
Research Office, Southwestern College, 1974	26	81	19	28	71	29
Research Services Office, Lakeland Community College, 1975	10	80	20	–	–	–
Parker, Whelan, et al., 1979	306	89	11	–	–	–
Quanty, 1976	27	81	19	–	–	–
Larkin, 1977	55	89	11	–	–	–
University of Hawaii Community Colleges, 1972[b]	121	93	7	–	–	–
Wisconsin Board of Vocational, Technical, and Adult Education, 1979	1985	80	20	–	–	–

[b] Author used *Dictionary of Occupational Titles* in determining relatedness.

TABLE 39

POSTSECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Health	Business and Office
No Job Available In Training Area	Anthony, 1971	2	—	—
	Baratta, 1978	21	—	4
	Eyler, et al., 1974	115	8	30
	Percent for Curriculum Area		7%	23%
Learned New Skill in Service or School	Anthony, 1971	4	—	—
	Baratta, 1978	4	—	1
	Eyler, et al., 1974	30	8	4
	Percent for Curriculum Area		7%	3%
Training Insufficient	Baratta, 1978	4	—	1
	Eyler, et al., 1974	155	33	31
	Percent for Curriculum Area		27%	22%
Better Job Opportunity or Pay in Another Field	Baratta, 1978	6	—	—
	Eyler, et al., 1974	122	33	27
	Percent for Curriculum Area		27%	19%

TABLE 39–Continued

POSTSECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Health	Business and Office
Other	Anthony, 1971	4	–	–
	Baratta, 1978	21	5	6
	Eyler et al., 1974	61	17	9
	Percent for Curriculum Area		18%	10%
Preferred to Work in Another Field	Baratta, 1978	3	–	2
	Eyler et al., 1974	113	17	30
	Anthony,1971	4	–	–
	Percent for Curriculum Area		14%	22%
Total Number of Responses		669	121	145

TABLE 39–Continued

POSTSECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Technical	Public Service
No Job Available in Training Area	Anthony, 1971	2	–	–
	Baratta, 1978	21	1	16
	Eyler et al., 1974	115	25	17
	Percent for Curriculum Area		20%	22%
Learned New Skill in Service or School	Anthony, 1971	4	–	–
	Baratta, 1978	4	1	2
	Eyler et al., 1974	30	3	6
	Percent for Curriculum Area		3%	5%
Training Insufficient	Baratta, 1978	4	2	1
	Eyler et al., 1974	155	28	28
	Percent for Curriculum Area		23%	20%
Better Job Opportunity or Pay in Another Field	Baratta, 1978	6	3	3
	Eyler et al., 1974	122	28	21
	Percent for Curriculum Area		23%	16%

TABLE 39–Continued

POSTSECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Technical	Public Service
Other	Anthony, 1971	4	–	–
	Baratta, 1978	21	2	8
	Eyler et al., 1974	61	10	21
	Percent for Curriculum Area		9%	20%
Preferred to Work in Another Field	Baratta, 1978	3	–	1
	Eyler, et al., 1974	113	30	23
	Anthony, 1971	4	–	–
	Percent for Curriculum Area		23%	16%
Total Number of Respondents		669	133	147

TABLE 39–Continued

POSTSECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Communications	Percent of Total Responses
No Job Available in Training ARea	Anthony, 1971	2	–	
	Baratta, 1978	21	–	
	Eyler et al., 1974	115	35	
	Percent for Curriculum Area		32%	1%
Learned New Skill In Service or School	Anthony, 1971	4	–	
	Baratta, 1978	4	–	
	Eyler, et al., 1974	30	9	
	Percent for Curriculum Area		8%	6%
Training Insufficient	Baratta, 1978	4	–	
	Eyler, et al., 1974	155	35	
	Percent for Curriculum Area		32%	24%

TABLE 39–Continued

POSTSECONDARY STUDIES FOCUSING ON REASONS FOR EMPLOYMENT IN AREAS NOT RELATED TO TRAINING

Major Reason For Not Working In Job Field	Authors	Total Number of Responses	Occupational Curriculum Area	
			Communications	Percent of Total Responses
Better Job Opportunity or Pay in Another Field	Baratta, 1978	6		
	Eyler et al., 1974	122	13	
	Percent for Curriculum Area		12%	19%
Other	Anthony, 1971	4	–	
	Baratta, 1978	21	–	
	Eyler et al., 1974	61	4	
	Percent for Curriculum Area		4%	13%
Preferred to Work in Another Field	Baratta, 1978	3	–	
	Eyler et al., 1974	113	13	
	Anthony, 1971	4	–	
	Percent for Curriculum Are		12%	17%
Total Number of Responses		669	109	